STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT BOARD

IN THE MATTER OF PROPOSED NEW REGULATION,
20.2.50 NMAC – *Oil and Gas Sector – Ozone Precursor Pollutants* **No. EIB 21-27 (R)**

NATIONAL PARK SERVICE'S NOTICE OF INTENT TO PRESENT DIRECT REBUTTAL TECHNICAL TESTIMONY AND RESPONSE OPPOSING PETITIONER'S MOTION TO STRIKE

The National Park Service (NPS) hereby submits our (A) Notice of Intent (NOI) to Present Direct Rebuttal Testimony and Related Materials; and its (B) Response in Opposition to New Mexico Environment Department's (Department) Motion to Strike NPS's Technical Testimony. The NPS appreciates the opportunity to repackage its initial Technical Testimony in this matter as Direct Rebuttal Technical Testimony to address alleged defects identified by the Department, and requests that the Board consider both submissions in this rulemaking proceeding.

A. NOI to Present Direct Rebuttal Testimony

Consistent with the Environment Improvement Board (Board) Procedural Order dated August 30, 2021, and in light of the Department's Motion to Strike the NPS's Technical Testimony, the NPS has repackaged its submissions as direct rebuttal testimony. The attached package serves as the NPS' direct rebuttal testimony and compiles our revised NOI together with a copy of each rebuttal exhibit, including the written testimony of the NPS witness, a statement of witness qualifications, as well as witness contact information. The NPS also re-files its proposed changes to proposed Part 50 that will be presented during testimony at the hearing.

In accordance with 20.1.1.302A NMAC, the NPS states as follows:

1. The name of the person filing this Notice and that the technical witnesses will be testifying on behalf of is the NPS.

The NPS preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The NPS will testify in support of New Mexico's proposed ozone precursor rule. Recent research at Carlsbad Caverns National Park in New Mexico demonstrates the need for emission reductions from oil and gas sources that this rule will support. The NPS offers recommendations to strengthen the proposed rule.

2. The name, address, affiliation, and qualifications, including educational and work backgrounds of each technical witness are as follows:

NPS will call the following primary witness to present technical testimony at the hearing:

John Vimont is the Acting Chief of the NPS Air Resources Division and the Chief of the Research and Monitoring Branch for the Division. Mr. Vimont holds a Bachelor of Science degree in Atmospheric Sciences from the University of Washington and a Master of Science in Atmospheric Science from Colorado State University. He has worked for the Park Service since 1991. Before that, he held positions with the Environmental Protection Agency (1987-1991) and the New Mexico Air Quality Bureau (1982-1987). He has expertise in air quality modeling, air quality monitoring, and supporting policy with science. His resume is submitted herewith as NPS Exhibit A. His contact information is:

John Vimont
Acting Chief,
Air Resources Division
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PO Box 25287

Denver, Colorado 80225-0287
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NPS may call upon additional technical witnesses to present in the case that Mr. Vimont is not available. These witnesses may respond to questions in their area of expertise if needed:

Lisa Devore is the Air Quality Specialist for the Intermountain Region of the Park Service. Ms. Devore holds a Bachelor of Science in Environmental Engineering and Master of Science in Civil Engineering from the University of Colorado at Boulder. She has worked for the Park Service since 2020. Before that, she was a Planning Special Lead, Emerging Air Quality Issues Supervisor, Planner, Permit Engineer, and Air Quality Modeler at the Colorado Department of Public Health & Environment (2005-2020). She has expertise in air pollution control technology, policy, and regulatory review. Her contact information is:

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Kirsten King is the Policy, Planning, and Permit Review Branch Chief and Environmental Engineer for the National Air Resources Division of the Park Service. Ms. King holds a Bachelor of Science in Chemical Engineering and Petroleum Refining from Colorado School of Mines and a Master of Science in Environmental Science from the University of Colorado. She has worked for the Park Service since 2017. Before that, she was the Oil and Gas Environmental

Manger for Encana Oil and Gas (2014-2017), the Stationary Sources Program Manager at the Colorado Department of Public Health & Environment (2006-2014), and the Regulatory and Compliance Assistance Unit Supervisor at the Colorado Department of Public Health & Environment (2002-2006). She has expertise in air quality permitting, policy, and regulations.

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Anthony Prenni is a Chemist and IMPROVE Program Manager for the National Air Resources Division of the Park Service. Dr. Prenni holds a Bachelor of Science in Chemistry from Emory University, a Ph D. in Analytical/Atmospheric Chemistry from the University of Colorado and was a Postdoctoral Scientist in the Atmospheric Department at Colorado State University. He has worked for the Park Service since 2013. Before that, he was a Research Scientist in the Department of Atmospheric Science at Colorado State University (2003-2013). He has expertise in atmospheric chemistry and air quality monitoring.

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Barkley Sive is a Chemist and Gaseous Pollutant Monitoring Program Manager for the National Air Resources Division of the Park Service. Dr. Sive holds a Bachelor and Master of Science in Chemistry from the University of California, Irvine, and a Ph D. in Analytical/Atmospheric Chemistry from the University of California, Irvine. He was a Postdoctoral Research Associate in Atmospheric Chemistry in the Laboratory for Atmospheric and Space Physics at the University of Colorado at Boulder. He has worked for the Park Service since 2013. Before that, he was an Assistant Professor in the Department of Chemistry at Appalachian State University (2011-2013) and an Assistant/Associate Professor at the University of New Hampshire in the EOS Institute/Climate Change Research Center (2002-2011). He has expertise in atmospheric chemistry, source apportionment, and air quality monitoring.

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Andrea Stacy is an Environmental Protection Specialist for the National Air Resources Division of the Park Service. Ms. Stacy holds a Bachelor's in Environmental Science from Montreat College and has Master's level continuing education credits in Environmental Engineering from the University of Colorado. She has worked for the Park Service since 2008. Before that, she was an air quality specialist for the U.S. Forest Service (2002-2008). She has expertise in air quality policy, planning, regulatory and permit review, air pollution control technology, and the oil and gas industry.

Andrea Stacy

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3. Mr. Vimont will be present on a virtual meeting platform.

4. Mr. Vimont's written testimony is submitted herewith as NPS Exhibit B. Mr. Vimont's verbal note pages as part of the NPS Presentation is submitted herewith as NPS Exhibit C. Mr. Vimont will read his written testimony and then proceed with the Presentation during the hearing.

5. The NPS recommends revisions to the proposed regulation that are provided in NPS Exhibit D. The NPS supports the petition.

6. The NPS intends to offer the following exhibits into evidence at hearing:

Exhibit A: John Vimont Curriculum Vitae

Exhibit B: NPS Written Technical Testimony to New Mexico Regarding the Proposed Ozone Precursor Rule

Exhibit C: NPS Presentation in Note Pages Format

Exhibit D: NPS Recommended Revisions to Proposed Regulation

Exhibit E: NPS Presentation in PDF format

The NPS can provide the presentation in pptx format upon request. The NPS reserves the right to call additional witnesses.

B. The Department's Motion to Strike should be denied because no party was prejudiced by the alleged defects

In the NPS's Direct Rebuttal Technical Testimony, the NPS has addressed the procedural and administrative concerns raised by the Department in its Motion to Strike and requests that the Board accept both this Direct Rebuttal Technical Testimony as well as the NPS's original submission of Technical Testimony. The NPS opposes the Department's Motion to Strike the NPS's original Technical Testimony and requests that it be denied because any alleged administrative defect was minimal and no party was prejudiced by the NPS's provision of the initial technical testimony or service of the testimony, which have been available to the public on the Board's website since July 28, 2021. The Department, the Board, the other parties to this proceeding, and the public have all received notice of the NPS's Technical Testimony on the Board's website. While the NPS did not file a certificate of service, there is no express legal requirement to do so. The Department nowhere identifies a requirement in New Mexico Administrative Code imposing such a legal formality from non-lawyer submitters. Instead, pursuant to instructions in the hearing notice, the NPS timely submitted its NOI to Pamela Jones, Board Administrator, Felicia Orth and Karla Soloria on July 28, 2021. At that time, the NPS did not have a copy of Department contacts for NOI service, as these contacts were not specified in the hearing notice. The NPS has now corrected these minimal procedural defects in service at this time, as recommended by the Department in its Motion. The NPS respectfully requests that the Board accept this corrected NOI as no party has raised any evidence of harm or prejudice.

The Board should reject the Department's claim that the NPS failed to include a copy of direct testimony in narrative form without attribution to any witness. The NPS provided a written narrative of its technical testimony in the notes section of the submitted PowerPoint presentation as well as the individual slides. In the document entitled "Technical Testimony Requirements," the NPS identified the primary witness responsible for the materials (John Vimont) and additional technical witnesses who

were available to respond to questions as needed. It is disingenuous for the Department to claim ignorance as to the identity of the NPS's primary witness just because he was identified in a separate NPS submission from the PowerPoint presentation, albeit in documents the NPS provided to the Board simultaneously.

The NPS provided the information required by the Board's rules in the PowerPoint and by identifying the NPS's primary witness. A PowerPoint presentation is no less a "narrative" as required by 20.1.1.302(A)(4) NMAC, than a Word document. Indeed, a PowerPoint narrative, with notes, provides a textual as well as a visual narrative. To address the Department's concerns about whether a PowerPoint is a "narrative" and which witness's testimony is contained in the PowerPoint, the NPS is resubmitting a corrected version of this PowerPoint presentation, printed in notes format, in Exhibit C. In an abundance of caution, the NPS will also provide a written statement in Exhibit B, which contains the revised Summary of Technical Testimony (retitled NPS Written Technical Testimony to New Mexico Regarding the Proposed Ozone Precursor Rule, September 2021). The NPS is addressing the alleged submission errors in this revised NOI by attributing the technical testimony to the NPS's primary witness, John Vimont, NPS Air Resources Division, Research and Monitoring Branch Chief and Acting Division Chief. The NPS respectfully requests that the Board consider these corrections to the NOI and admit our technical testimony to the hearing proceedings.

The Board should reject the Department's claim that the NPS failed to present its modifications to the proposed rulemaking in writing. The NPS provided the text of recommended changes to the proposed rule using "tracked changes" in a document titled *NPS redline_Proposed-Part-20.2.50-2021.07.28 Final.docx*, included in the NPS's July 28, 2021 NOI submittal. It is unclear how these documents were not posted on the Board's website. To address the Department's concerns, the NPS is resubmitting these recommendations in Exhibit D. Specifically, the NPS's recommended changes to the

regulatory text are provided in red bold/strikeout text and begin on page six of the pdf version of the 20.2.50 NMAC proposed rule provided in Exhibit D. The NPS respectfully requests that the Board consider our resubmission of these recommended changes to the proposed regulatory text.

The NPS has repackaged its original submissions as recommended by the Department and appreciates the opportunity to provide Direct Rebuttal Technical Testimony. The NPS requests that the Board accept its original submissions in addition to considering the Direct Rebuttal Technical Testimony in which the Department's concerns have been addressed. Pursuant to 28 U.S.C. § 1746, we certify under penalty of perjury that the foregoing is true and correct.

Respectfully submitted,
National Park Service

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CERTIFICATE OF SERVICE

I hereby certify that on September 7, 2021, a true and correct copy of the foregoing ***National Park Service's Notice of Intent to Present Direct Rebuttal Technical Testimony and Response Opposing Petitioner's Motion to Strike*** was served via electronic mail to the following:

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NPS
Exhibit A

JOHN VIMONT

12795 West Alameda Parkway, Lakewood, CO, 80228 | 303.969.2808 | john_vimont@nps.gov

EDUCATION

Colorado State University, Fort Collins, CO
M.S. Atmospheric Science **1982**

University of Washington, Seattle, WA
B.S. Atmospheric Sciences **1978**

RELATED EXPERIENCE

National Park Service – Air Resources Division
Acting Chief, Air Resources Division **August 2021 – Present**
Additional duties overseeing administration of the Division including coordinating policy, planning, research, and monitoring.

Chief, Research and Monitoring Branch **May 2003 – Present**
Oversee the NPS atmospheric research and analysis program, with focus on visibility, atmospheric deposition, atmospheric chemistry, and source attribution through data analysis and regional modeling. Oversee the ecological effects of air pollution on park resources. Oversee the NPS monitoring programs which include components of NADP, CASTNET, and NPS gaseous monitoring and oversee the IMPROVE program on behalf of the IMPROVE steering committee.

National Park Service – Air Resources Division
Meteorologist **March 1991 – May 2003**
Responsible for the development and implementation of regional air quality modeling to address the air quality related values of national parks throughout the Service. Focus on visibility assessment, atmospheric deposition, and ambient concentrations affecting park resources.

Environmental Protection Agency – Region 9
Regional Meteorologist **June 1987 – March 1991**
State and Federal Implementation Plan Modeling for Region 9 states. Included modeling for the South Coast Air Basin, San Joaquin Valley, Sacramento, Bay Area, and Phoenix.

State of New Mexico – Air Quality Bureau
Environmental Engineering Specialist **March 1982 – June 1987**
Conducted regulatory modeling for permitting and State Implementation Plans.

National Park Service
U.S. Department of the Interior

Interior Regions 6, 7, and 8 (Intermountain), and Air Resources Division
Natural Resource Stewardship & Science

NPS Exhibit B

NPS Written Technical Testimony to New Mexico Regarding the Proposed Ozone Precursor Rule

September 2021

The National Park Service (NPS) appreciates the opportunity to provide technical comments to the New Mexico Environmental Improvement Board on the 20.2.50 NMAC Oil and Gas Sector-Ozone Precursor Pollutants Rulemaking (EIB No. 21-27 (R)). If the proposed rule is enacted, it will help protect the air resources of the national parks in and near New Mexico. The NPS operates ozone air quality monitoring stations at a number of parks across the country, including Carlsbad Caverns National Park and Chaco Culture National Historical Park in New Mexico, as well as Mesa Verde National Park in Colorado. These monitors all follow Environmental Protection Agency (EPA) regulatory monitoring protocols. The NPS also operates a non-regulatory ozone monitor at Guadalupe Mountains National Park in Texas. We measure exceedances of the national ambient air quality standard (NAAQS) for ozone at all these sites. The 3-year average of the 4th highest 8-hour average (the form of the ozone NAAQS) has exceeded the level of the NAAQS (70 ppb) consistently at Carlsbad Caverns National Park. (2016-18: 71 ppb, 2017-19: 74 ppb, 2018-20: 73 ppb)

Ozone concentrations that exceed the NAAQS pose a health threat to park visitors and staff. High ozone levels can also adversely affect plants and the ecosystems that depend on them. Given the high levels measured at Carlsbad Caverns National Park, the NPS studied the causes of high ozone at the park in 2017 and 2019. Ozone is formed in the atmosphere near the earth's surface through reactions of Volatile Organic Compounds (VOCs) and Oxides of Nitrogen (NO_x), in the presence of sunlight. Therefore, the measurements in the studies included over 70 VOCs and the nitrogen compounds that occur during the ozone formation process.

The 2017 study measured VOCs at Carlsbad Caverns, Great Basin, Grand Canyon, and Joshua Tree National Parks. The level of VOCs at Carlsbad Caverns was more than five times the levels at the other parks. The mix of VOCs at Carlsbad Caverns was striking in that it was dominated by Alkane compounds that are predominantly associated with oil and gas production. The VOC sampling was done in the afternoon using automated sample containers. To further understand what was happening at Carlsbad Caverns, the NPS initiated the 2019 study that allowed for real time measurements of VOC and NO_x components.

The 2019 study clearly showed that the NO_x and VOCs that reach the park are associated with oil and gas production to the east and southeast of the park. Ethane is a VOC that is associated with oil and gas production. Ethane concentrations were 16 ppb averaged over the duration of the study and one-hour values exceed 100 ppb. Ethane levels in unpolluted areas are generally around 1 ppb. Mixes of other VOCs, such as the i-pentane to n-pentane ratios, indicated the dominance of oil and gas sources. The mix of total nitrogen compounds (NO_y) to NO_x clearly indicates nearby sources of NO_x as the dominant contributor to ozone formation.

The data from the measurements at Carlsbad Caverns National Park and a review of the proposed rule lead us to the following conclusions:

- Ozone concentrations at Carlsbad Caverns National Park frequently exceed the national ambient air quality standard for ozone.
- The information from the studies highlights the need for both NO_x and VOC reductions in the oil and gas sector to reduce ozone concentrations and supports the proposed engine & turbine standards.
- NMED's proposed NO_x limits for engines and turbines are similar to on-the-books standards in other states, including Texas and Pennsylvania. Note: California engine NOx limits are significantly more stringent than NMED's proposal—our recommended changes are based on Pennsylvania's Best Available Technology (BAT) limits.
- Based on examples from Pennsylvania's state requirements, we recommend the following changes are incorporated to strengthen the proposed rule (based on Pennsylvania general permitting and Reasonable Available Control Technology (RACT) requirements):

  <u>Rich-burn Engines</u>

  - Require all *new* and *existing* rich-burn engines >500 HP to meet a limit of 0.2 g NO_x/hp-hr (NMED proposed 0.5 g NO_x/hp-hr)
  - Require all *new* and *existing* rich-burn engines >100 HP and <u>≤</u>500 HP to meet a limit of 0.25 g NO_x/hp-hr (NMED did not propose limits for this size class)
  - Require all *new* rich-burn engines <u>≤</u> 100 HP to meet a proposed limit of 1.0 g NO_x/hp-hr (NMED did not propose limits for this size class)

  <u>Lean-burn Engines</u>

  - Require all *existing* lean-burn engines <u>≤</u>100 HP to meet a proposed limit of 2.0 g NO_x/hp-hr (NMED did not propose limits for this size class)
  - Require all *existing* lean-burn engines >100 and <u>≤</u>500 HP to meet a proposed limit of 1.0 g NO_x/hp-hr (NMED did not propose limits for this size class)
  - Require all *existing* lean-burn engines >500 HP to meet the proposed limit of 0.5 g NO_x/hp-hr (NMED proposed this limit for all *existing* engines greater than 1,000 HP)
  - Require all *new* lean-burn engines <u>≤</u>500 HP to meet a proposed limit of 1.0 g NO_x/hp-hr (NMED did not propose limits for this size class)

  <u>Existing Turbines</u>

  - Require all *existing* turbines ≥1,000 and <5,000 HP to meet a NO_x limit of 25 ppmvd @15% O_2 (NMED proposed a limit of 50 ppmvd @15% O_2 for all turbine size classes)
  - Require all *existing* turbines ≥ 5,000 HP and <60,000 HP to meet a NO_x limit of 15 ppmvd @15% O_2 (NMED proposed a limit of 50 ppmvd @15% O_2 for all turbine size classes)
  - Require all *existing* turbines ≥ 60,000 HP to meet a NO_x limit of 9 ppmvd @15% O_2 (NMED proposed a limit of 50 ppmvd @15% O_2 for all turbine size classes)

The National Park Service greatly appreciates the opportunity to provide technical comments. Please refer to the accompanying presentation to the board and the redline/strikeout version of the rule for more details.

Relevant reference:

Benedict, K.B., Prenni, A.J., El-Sayed, M.H., Hecobian, A., Zhou, Y., Gebhart, K.A., Sive, B.C., Schichtel, B.A, Collet, J.L., 2020. Volatile organic compounds and ozone at four national parks in the southwestern United States. Atmos. Environ. 239 https://doi.org/10.1016/j.atmosenv.2020.117783

National Park Service Technical Comments

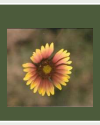
20.2.50 NMAC OIL AND GAS SECTOR-OZONE PRECURSOR POLLUTANTS RULEMAKING (EIB NO. 21-27 (R))

Synopsis

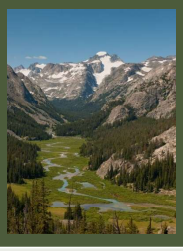
- Ozone concentrations exceed the level of the National Ambient Air Quality Standards (NAAQS) for ozone at Carlsbad Caverns National Park (NP) in New Mexico
- Volatile Organic Compounds (VOCs) measured at Carlsbad Caverns NP indicate the main sources of VOCs affecting ozone formation are from oil and gas activities
- Nitrogen oxide (NO_X) emissions that affect high ozone concentrations at Carlsbad Caverns NP are from local sources
- The measures proposed in this rule will help to reduce high ozone concentrations – more measures or more stringent measures are likely necessary to get below the NAAQS – this is a necessary step
- NO_x and VOC control measures are necessary to reduce ozone

The NPS and Air Resources—Why we Care

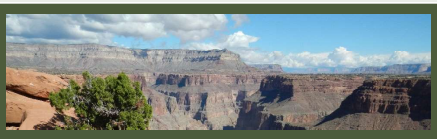
"…which purpose is to conserve the **scenery and the natural and historic objects** and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will **leave them unimpaired** for the enjoyment of future generations." (NPS Organic Act)



"Wilderness areas…shall be administered…in such a manner as will **leave them unimpaired** for future use and enjoyment as wilderness…" (Wilderness Act of 1964)



"…**preserve, protect and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores**…" (Clean Air Act as amended in 1977)



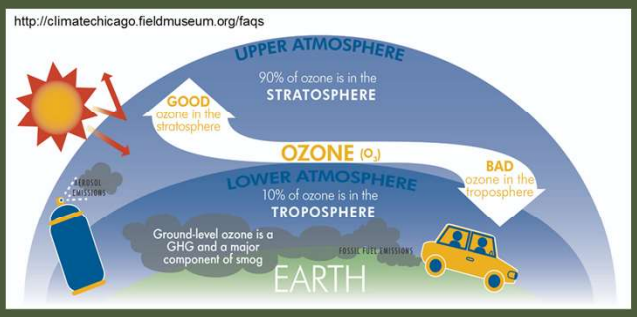
Regional Haze Rule, 1999

Requires state and federal agencies to work together to improve visibility in all 156 federal Class I national parks and wilderness areas

"In cases of doubt the land manager should err on the side of protecting the air quality-related values for future generations." (Senate Report No. 95-127, 95th Congress, 1977)

I will first go over some general information about air quality and national parks. A variety of laws require the protection of air resources at national parks and wilderness areas. The National Park Service relies on States and the EPA to implement air quality regulations that can protect park resources.

Ground Level Ozone



- Formed by reactions of NO_x and VOCs in the presence of sunlight
- Impacts vegetation and human health
- EPA Regulated Pollutant

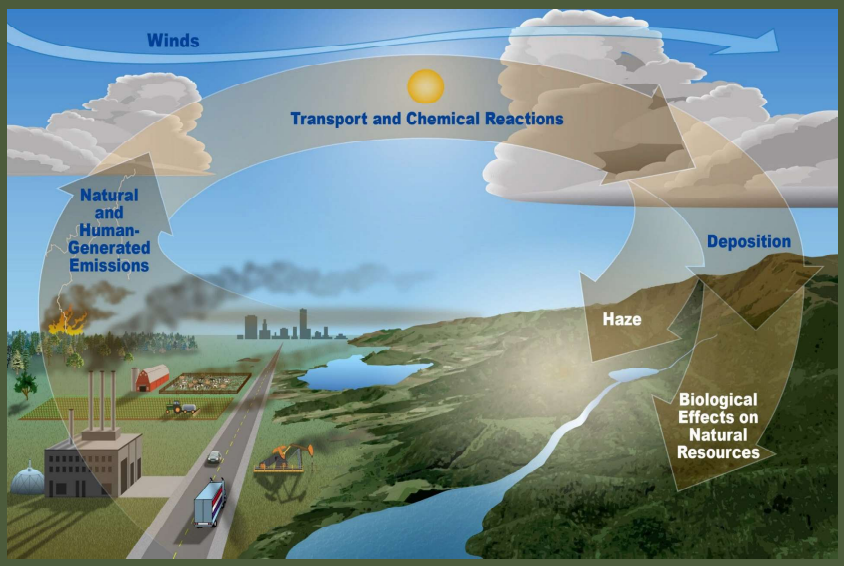
Lung Function

Foliar Injury

4

Our comments today are focused on the effects of NOx and VOCs on ozone formation of ground level ozone. High ozone concentrations affect the health of staff and visitors to parks and can affect plant health.

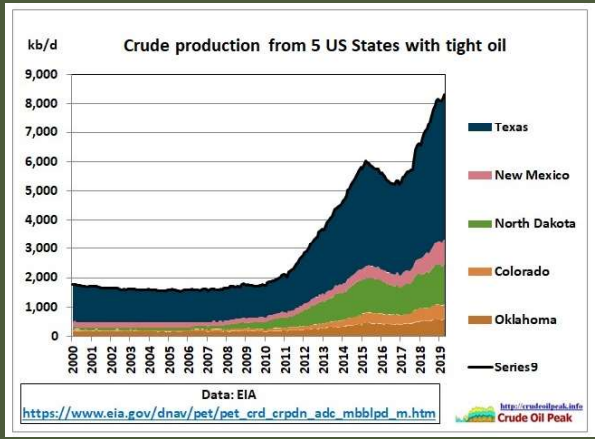
Pollutants Come from Outside Parks



5

This schematic illustrates that air pollutants are transported into parks, leading to effects on park resources, staff and visitors

Extensive Oil & Gas Activities throughout Midwest and West



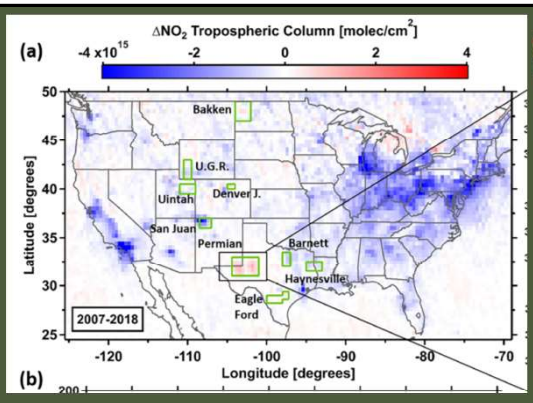
6

There has been an increase in oil and gas development in many areas of the country, including in the areas affected by the proposed rule we are discussing here. Several parks are located near and are affected by this development including Carlsbad Caverns National Park, Guadalupe Mountains National Park, Chaco Culture National Historical Park, and Mesa Verde National Park in Colorado. Most of the data presented today are focused on studies at Carlsbad Caverns National Park.

Oil and gas development brings heavy industry to once remote regions of the country near national parks which can negatively impact park air quality. The Carlsbad Caverns special study was designed to help identify emissions and source sectors impacting air quality in the park.

Increases in NO_x* and Ozone at Carlsbad Caverns National Park

*NOx = NO + NO_2



Trends in NO_x, from satellite data
(Dix et al., 2020)

Carlsbad Caverns Ozone

70 ppb is the national standard

Year	# Exceedance Days	Years	8-hr 4th high O_3
2016	None	2014-2016	67
2017	None	2015-2017	66
2018	10	2016-2018	**71**
2019	6	2017-2019	**74**
2020	9	2018-2020	**73**

7

The figure in the upper part of this slide shows that contrary to trends in most regions of the country, NOx emissions in southeastern New Mexico are increasing. The ozone concentrations at Carlsbad Caverns National Park have been increasing and are exceeding the ozone standard.

Measuring VOC markers (**70+**) to better understand sources affecting parks

- **Oil & Gas**
  - NMHCs: light alkanes C2-C6, i-butane/n-butane, i-pentane/n-pentane
- **Biomass Burning**
  - acetonitrile, methyl halides (CH_3Cl, CH_3Br, CH_3I), OVOCs (MeOH, acetone)
- **Urban**
  - industrial: benzene, toluene, xylenes
  - solvent evaporation: halocarbons (CH_2Cl_2, C_2Cl_4, C_2HCl_3, $CHCl_3$, CH_3CCl_3)
  - Waste water treatment: $CHCl_3$, $CHBr_3$
- **Agriculture**
  - crops: alkenes (hexenes, ethene, propene), DMS, $CHBr_2Cl$
  - animal husbandry: methanol, ethanol, acetaldehyde
- **Transportation**
  - Fuel Evaporation: i-pentane/n-pentane
  - fuel combustion: ethyne, ethene, propene, benzene,
  - exhaust: i-butane/n-butane, i-pentane/n-pentane, alkenes, ethyne
- **Biogenic/natural emissions:**
  - isoprene, monoterpenes
- **Stratospheric Intrusion:**
  - OCS, CFCs, HCFCs
- **Ocean/Marine:**
  - $MeONO_2$, $CH2Br_2$, $CHBr_3$, CH_2ClI, DMS, OCS
- **Oxidation/photochemical processing:**
  - $RONO_2$, OVOCs

8

Ozone formation takes place from reactions of VOCs and NOx in the presence of sunlight. Different VOCs have varying reactivities and in turn affect ozone formation to varying degrees. The different types of VOCs and the mix of VOCs are also markers for identifying source types/emission origin. In the remainder of the presentation, we will show that markers indicating a dominance of oil and gas sources are found at Carlsbad Caverns National Park.

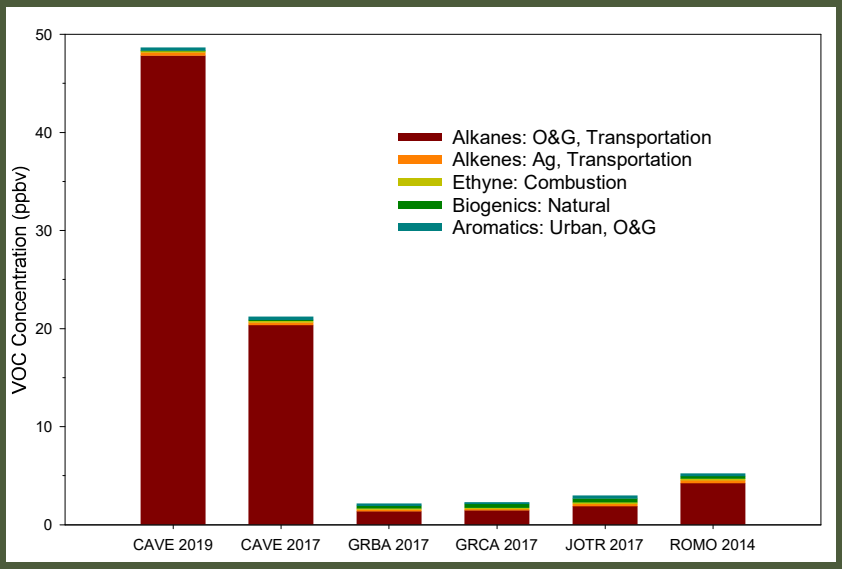
VOC Survey Study
April – September 2017

- Mix of VOCs collected tell us about the sources impacting the parks.
- Park Natural Resource Staff at four parks collected VOC canisters over 5-month period.
  - Carlsbad Caverns NP (CAVE)
  - Great Basin NP (GRBA)
  - Grand Canyon NP (GRCA)
  - Joshua Tree NP (JOTR)

9

In 2017 the NPS carried out a survery study at four national parks that periodically measure high ozone concentrations to determine the mix of VOCs at these disparate areas. (The abbreviations for these parks will appear in some of the graphs that follow.)

Average VOC Concentration



Carlsbad Caverns NP

VOC Mix Dominated by Oil &Gas

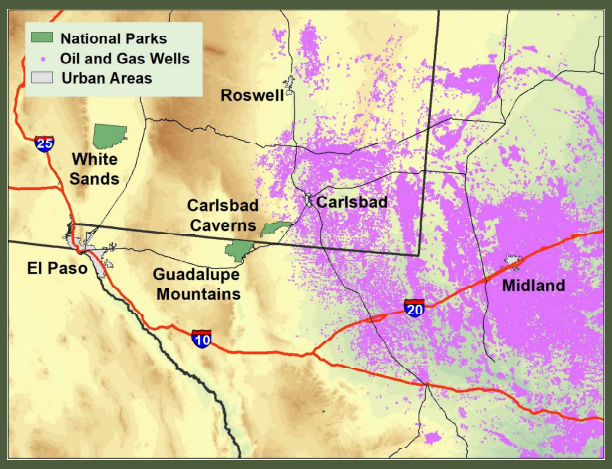
Carlsbad Caverns NP Sampling Notes

- 2017: Daytime only
- 2019: Hourly diurnal

10

Park Abbreviations: CAVE, Carlsbad Caverns NP, GRBA, Great Basin NP, GRCA, Grand Canyon NP, JOTR, Joshua Tree NP, ROMO, Rocky Mountain NP Note that Total VOCs and especially the Alkanes associated with oil & gas are up to 5 to 10 times higher at Carlsbad Caverns than at the other parks.

Extensive Oil and Gas Development near Carlsbad Caverns NP

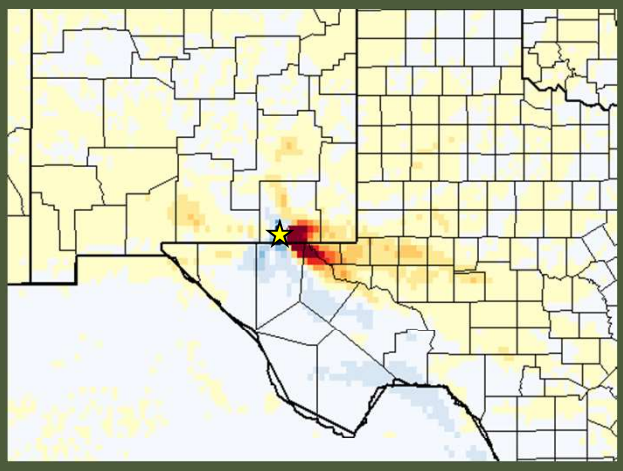


Where does air come from during periods of high ozone?

11

There is extensive oil and gas development in the areas east of Carlsbad Caverns. It raises the question: Where does the air come from during periods of high ozone?

Where the Air Comes From When Ozone is High

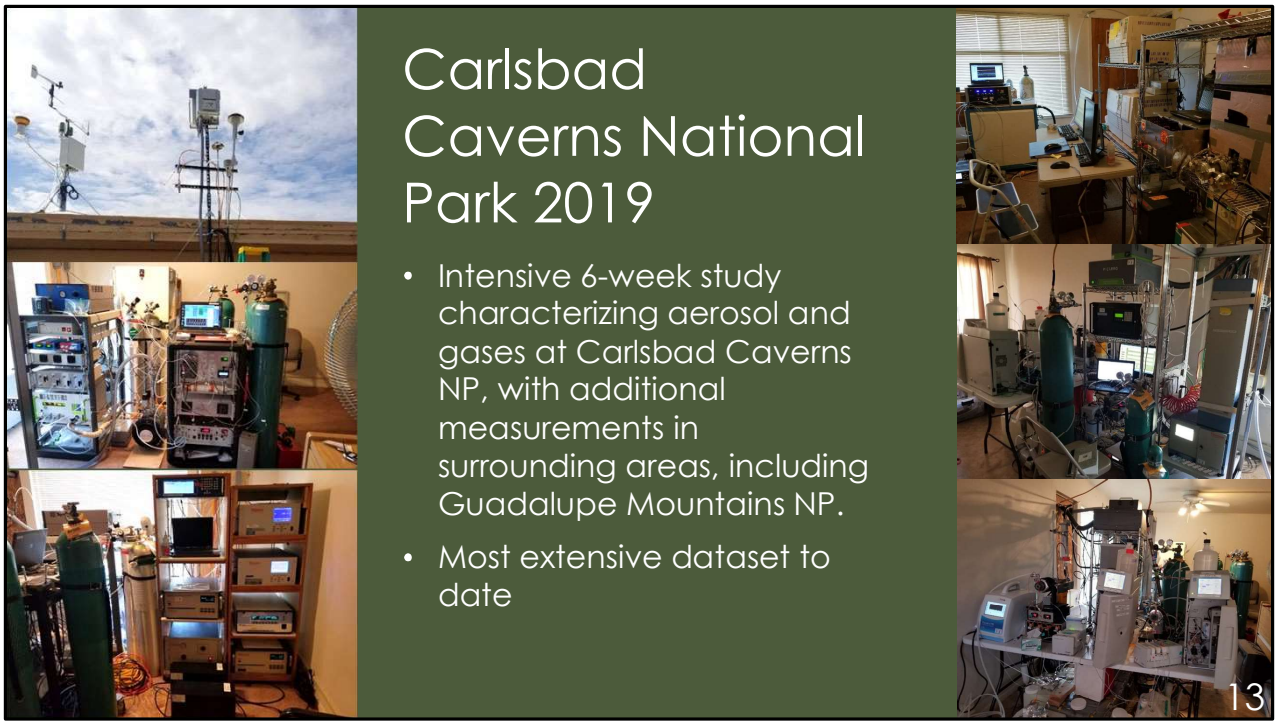


Warm colors: ***More likely*** to come from these areas during high concentrations.

Cool colors: ***Less likely*** to come from these areas during high concentrations.

12

During the 2017 study high ozone corresponded to air flow from the east and southeast.



As shown in the picture earlier, the 2017 study used evacuated, clean sampling canisters. Those were used for some parts of the 2019 study, but many, additional specialized research grade instruments were used at Carlsbad Caverns NP in 2019 to obtain high time resolution measurements of VOCs and nitrogen compounds.

Carlsbad Caverns National Park Study 2019 - Objectives

1. What are the primary VOC drivers of regional ozone formation and how might future changes in VOC emissions affect peak ozone at Carlsbad Caverns National Park?
2. What is the nitrogen budget in the region and how sensitive is ozone formation to changes in NO_x concentrations?
3. What species, e.g. NO_x, H_2S, and VOC, contribute to or limit aerosol formation (which affects health standards and visibility)?

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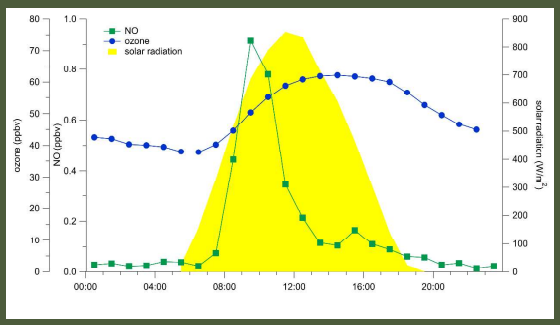
The 2019 study produced very extensive data. We are still analyzing many aspects of it. But as we'll show in the following slides, oil and gas emissions are driving the formation of ozone at Carlsbad Caverns National Park.

How do VOCs and NO_X interact?

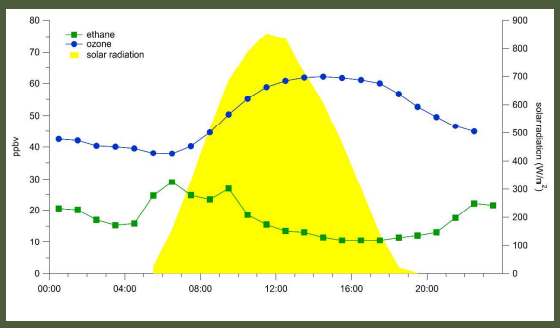
- The next slide shows the average concentrations of ozone, NO, and VOCs during the 2019 study
- Each figure shows the average ozone and the sunlight intensity for each hour of the day
- The three charts show the diurnal (daily) patterns of different compound classes:
  - How NO (unreacted NO_X) and ethane, one of the most abundantly emitted VOCs, build up and are reacted away
  - The formation of alkyl nitrates, one of the classes of VOCs formed through VOC + NO_x reactions in the atmosphere, has a similar pattern to ozone

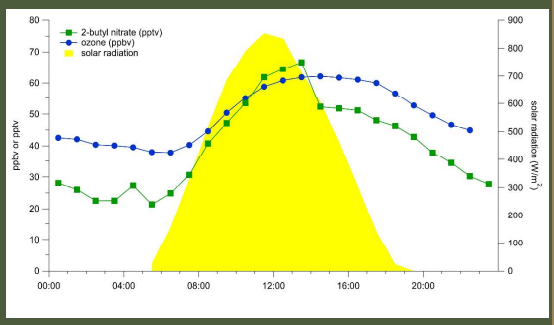
15



Diurnal Averages from 2019

- Ozone peaks in the late afternoon
- NO has a morning spike and emissions throughout the day
- VOCs (e.g., ethane) build up overnight and are reacted away during the day + mixing & dilution
- Secondary chemistry products, such as the alkyl nitrates (e.g., 2-butyl nitrate), have a similar diurnal distribution as ozone
- Alkyl nitrates are formed from parent n-alkane in the presence of NOx – high levels indicate abundant sources and local photochemistry



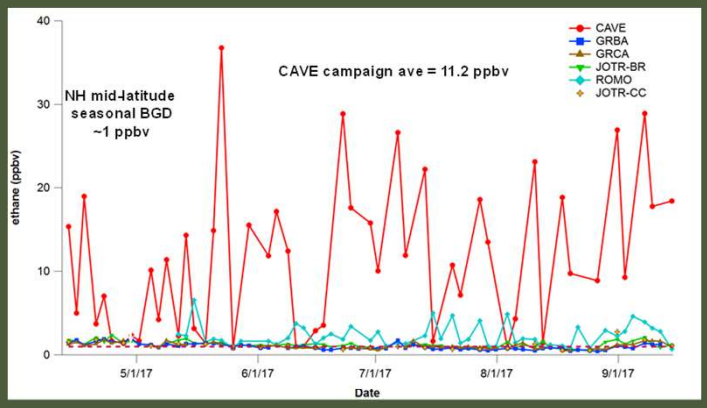


16

These 3 charts show the average concentrations of NO, the VOCs ethane and 2-butyl nitrate, and ozone throughout the day. Concentrations are plotted along with daily solar radiation.

You can see that ozone peaks in the later afternoon. There is a spike in “fresh” NOx emissions in the morning that tapers off as it reacts during the daylight hours. Similarly, there is more ethane peaking in the morning that subsequently reacts in the ozone forming process. The 2-butyl nitrate which is a reaction product peaks around the time of the ozone peak, indicating that reactions of the ozone forming pollutants occurred during that day and that the ozone wasn’t transported to the area from afar.

2017 and 2019 studies showed similar results at Carlsbad Caverns



Ethane avg 2019 = 17.3 ppbv
Hourly sampling exhibited higher diurnal variability
Regularly observed levels >100 ppbv

High VOC concentrations are all from oil and gas emissions.

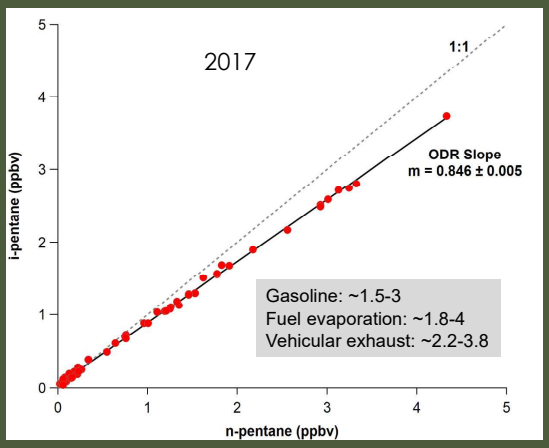
17

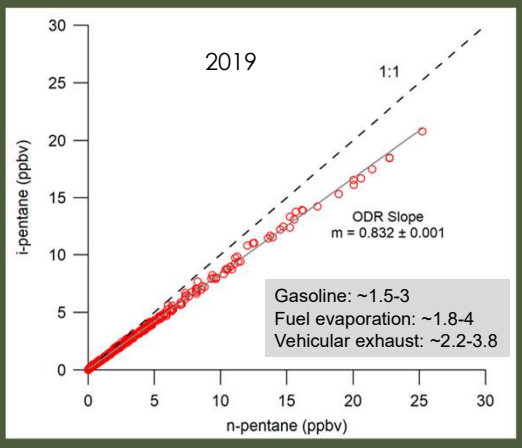
Ethane is a distinctive indicator of emissions from oil and gas operations. It can be seen that Carlsbad Caverns during the 2017 study stands out from the other parks. In most areas, when ethane is measured the background would be around 1ppbv. In 2019 the average for the six-week study was just over 17 ppbv and some hourly values exceeded 100ppbv.

Oil & Gas Emissions Tracers

The Pentane Ratio

Carlsbad Caverns National Park 2017 & 2019



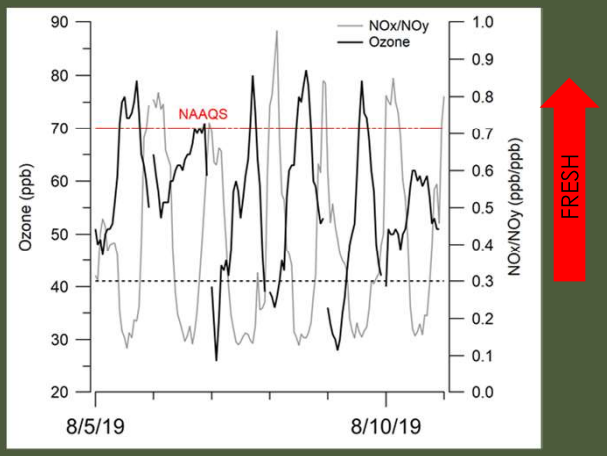


18

The i-pentane to n-pentane ratio is a good marker for different types of emissions. A ratio less than 1 indicates oil and gas operations. The ratio is constant between 2017 and 2019. The actual concentrations in 2019 are higher because they cover all hours of the day, whereas 2017 samples were only taken in the afternoon.

Fresh NO_x builds up at night and then reacts to form ozone

NOx/NOy > 0.3 → fresh pollution
NOx/NOy < 0.3 → photochemically aged (processed) air

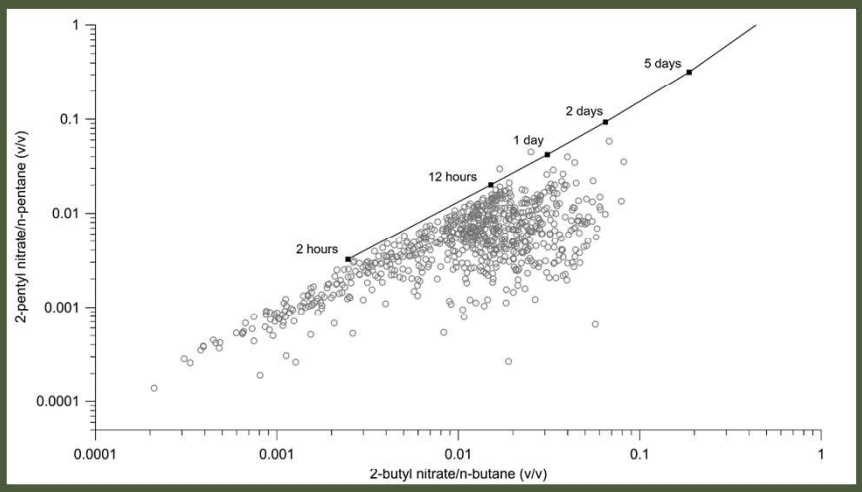


19

This chart shows that there is fresh buildup of NOx at night which is then processed through the VOC/NOx/Sunlight reactions to form ozone. The NOx is generated in the vicinity – NOx from farther away would have a much lower NOx to NOy ratio at night. While this slide is showing a particular multi-day event, it is important to note that this same NOx/NOy ratio was persistent throughout the entire study period, indicating fresh NOx emissions.

Photochemical Age using Alkyl Nitrates

Air mass aging (photochemical age) from ratios of alkyl nitrates to parent n-alkanes illustrate that VOC and NO_x emissions are fresh and air masses are impacted by local sources.



20

Alkyl nitrates are produced during the VOC/NOx reactions that form ozone. The ratios of alkyl nitrates to their parent compounds can give us a good estimate of how long the air pollutants have been reacting when they reach the park. This graph shows that the vast majority of the reaction times are below 12 hours. This clearly shows that the ozone forming NOx and VOCs are nearby. The fact that the points fall off the idealized model line implies that the model doesn't capture everything that is occurring.

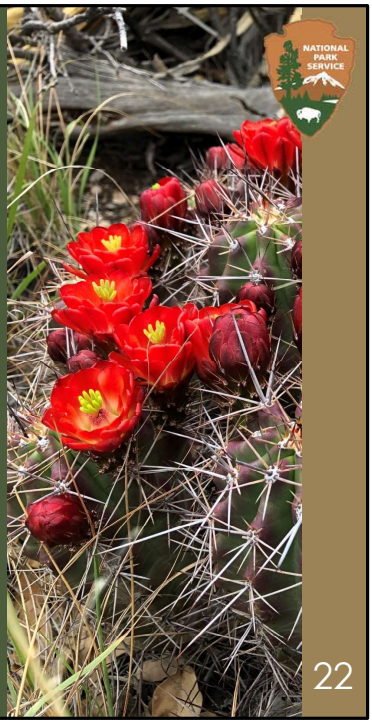
The data support the need for this rule

- Ozone concentrations at Carlsbad Caverns National Park frequently exceed the national ambient air quality standard for ozone.
- The information presented highlights the need for both NO_x and VOC reductions and supports the proposed engine & turbine standards.
- NMED's proposed NO_x limits for engines and turbines are similar to on-the-books standards in other states including Texas and Pennsylvania.
  - Note: California engine NO_x limits are significantly more stringent than NMED's proposal—our recommended changes are based on Pennsylvania's Best Available Technology limits.

21

Recommended changes (1)

- Based on examples from Pennsylvania's state requirements, we recommend the following changes be incorporated to strengthen the proposed rule.
  - → **Rich-burn Engines**
    - Require all *new* and *existing* rich-burn engines >500 HP to meet a limit of 0.2 g NO_x/hp-hr
      - NMED proposal is 0.5 g NO_x/hp-hr
    - Require all *new* and *existing* rich-burn engines >100 HP and ≤500 HP to meet a limit of 0.25 g NO_x/hp-hr
      - NMED is not proposing limits for this class size
    - Require all *new* rich-burn engines ≤100 HP to meet a proposed limit of 1.0 g NO_x/hp-hr
      - NMED is not proposing limits for this class size



22

We looked at engine and turbine limits included in state rules across the country. Based on this review, we suggest that slightly more stringent standards are feasible for engines and turbines and are necessary given the contribution of oil and gas emissions to air quality issues in NM. We recommend that NMED modify their proposal to reflect these limits as well as adopt standards for additional engine size classes.

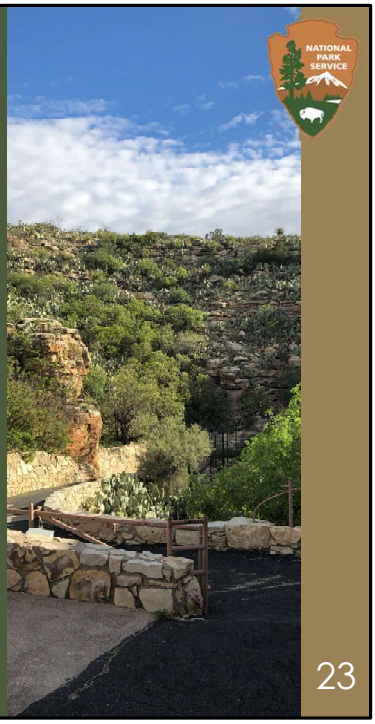
The limits we are proposing are currently being used by Pennsylvania as part of their general permit program for oil and gas sources except for the proposed limit for existing large (>60,000 HP) turbines. This limit is in Pennsylvania's proposed RACT III requirements.

Specifically, we request that all new and existing rich-burn engines greater than 500 horsepower meet a lower limit of 0.2 grams of NOx per horsepower-hour rather than the current proposal of 0.5 grams of NOx per horsepower-hour. Next, require all new and existing rich-burn engines greater than 100 horsepower and less than or equal to 500 horsepower to meet a limit of 0.25 grams of NOx per horsepower-hour versus no limits as part of the current proposal. Last for rich burn engines, require those less than or equal to 100 horsepower to meet a limit of 1 gram per horsepower-hour rather than no limits as part of the current proposal.

Recommended Changes (2)

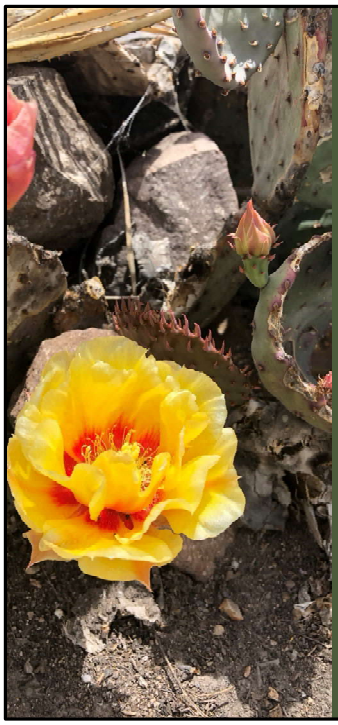
→ **Lean-burn Engines**

- Require all *existing* lean-burn engines ≤100 HP to meet a proposed limit of 2.0 g NO_x/hp-hr
  - NMED is not proposing limits for this size class
- Require all *existing* lean-burn engines >100 and ≤500 HP to meet a proposed limit of 1.0 g NO_x/hp-hr
  - NMED is not proposing limits for this size class
- Require all *existing* lean-burn engines >500 HP to meet the proposed limit of 0.5 g NO_x/hp-hr
  - NMED is proposing this limit for all existing engines greater than 1,000 HP
- Require all *new* lean-burn engines ≤ 500 HP to meet a proposed limit of 1.0 g NO_x/hp-hr
  - NMED is not proposing limits for this size class



23

For lean-burn engines we request that NM set the following NOx limits (see slide above).



Recommended Changes (3)

→ **Existing Turbines**

- Require all *existing* turbines ≥1,000 and <5,000 HP to meet a NO_x limit of 25 ppmvd @15% O_2
  - NMED is proposing a limit of 50 ppmvd @15% O_2 for all turbine size classes
- Require all *existing* turbines ≥ 5,000 HP and < 60,000 HP to meet a NO_x limit of 15 ppmvd @15% O_2
  - NMED is proposing a limit of 50 ppmvd @15% O_2 for all turbine size classes
- Require all *existing* turbines ≥ 60,000 HP to meet a NO_x limit of 9 ppmvd @15% O_2
  - NMED is proposing a limit of 50 ppmvd @15% O_2 for all turbine size classes

24

For turbines, we request that NM set the following NOx limits (see slide above).

National Park Service Summary

- Ozone concentrations exceed the level of the National Ambient Air Quality Standards (NAAQS) for ozone at Carlsbad Caverns National Park
- The NPS has studied ozone formation at a number of parks. Carlsbad Caverns National Park stands out as being most affected by oil and gas sources.
- Two studies have been done at Carlsbad in 2017 and 2019, during times when peak ozone concentrations are measured there. The two studies show consistent results.

25

Summary (continued)

- Volatile Organic Compounds (VOCs) measured at Carlsbad Caverns NP indicate the main sources of VOCs affecting ozone formation are from oil and gas activities
- Nitrogen oxide (NO_x) emissions that affect high ozone concentrations at Carlsbad Caverns NP are from nearby sources
- The measures proposed in this rule will help to reduce high ozone concentrations –this is a necessary step
  - More measures and/or more stringent measures are likely necessary to get below the NAAQS
- NO_x and VOC control measures are necessary to reduce ozone


Questions?
27

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 2 AIR QUALITY (STATEWIDE)
PART 50 OIL AND GAS SECTOR – OZONE PRECURSOR POLLUTANTS

20.2.50.1 ISSUING AGENCY: Environmental Improvement Board.
[20.2.50.1 NMAC – N, XX/XX/2021]

20.2.50.2 SCOPE: This Part applies to sources located within areas of the state under the board's jurisdiction that, as of the effective date of this rule or anytime thereafter, are causing or contributing to ambient ozone concentrations that exceed ninety-five percent of the national ambient air quality standard for ozone, as measured by a design value calculated and based on data from one or more department monitors. Once a source becomes subject to this rule, the requirements of the rule are irrevocably effective unless the source obtains a federally enforceable air permit limiting the potential to emit to below such applicability thresholds established in this Part.
[20.2.50.2 NMAC – N, XX/XX/2021]

20.2.50.3 STATUTORY AUTHORITY: Environmental Improvement Act, Section 74-1-1 to 74-1-16 NMSA 1978, including specifically Paragraph (4) and (7) of Subsection A of Section 74-1-8 NMSA 1978, and Air Quality Control Act, Sections 74-2-1 to 74-2-22 NMSA 1978, including specifically Subsections A, B, C, D, F, and G of Section 74-2-5 NMSA 1978 (as amended through 2021).
[20.2.50.3 NMAC - N, XX/XX/2021]

20.2.50.4 DURATION: Permanent.
[20.2.50.4 NMAC - N, XX/XX/2021]

20.2.50.5 EFFECTIVE DATE: Month XX, 2021, except where a later date is specified in another Section.
[20.2.50.5 NMAC - N, XX/XX/2021]

20.2.50.6 OBJECTIVE: The objective of this Part is to establish emission standards for volatile organic compounds (VOC) and oxides of nitrogen (NO_x) for oil and gas production, processing, and transmission sources.
[20.2.50.6 NMAC - N, XX/XX/2021]

20.2.50.7 DEFINITIONS: In addition to the terms defined in 20.2.2 NMAC - Definitions, as used in this Part, the following definitions apply.

A. "Approved instrument monitoring method" means an optical gas imaging, United States environmental protection agency (U.S. EPA) reference method 21 (RM21) (40 CFR 60, Appendix B), or other instrument-based monitoring method or program approved by the department in advance and in accordance with 20.2.50 NMAC.

B. "Auto-igniter" means a device that automatically attempts to relight the pilot flame in the combustion chamber of a control device in order to combust VOC emissions, or a device that will automatically attempt to combust the VOC emission stream.

C. "Bleed rate" means the rate in standard cubic feet per hour at which natural gas is continuously or intermittently vented from a pneumatic controller.

D. "Calendar year" means a year beginning January 1 and ending December 31.

E. "Centrifugal compressor" means a machine used for raising the pressure of natural gas by drawing in low-pressure natural gas and discharging significantly higher-pressure natural gas by means of a mechanical rotating vane or impeller. Screw, sliding vane, and liquid ring compressor is not a centrifugal compressor.

F. "Closed vent system" means a system that is designed, operated, and maintained to route the VOC emissions from a source or process to a process stream or control device with no loss of VOC emissions to the atmosphere.

G. "Commencement of operation" means for an oil and natural gas wellhead, the date any permanent production equipment is in use and product is consistently flowing to a sales lines, gathering line or storage vessel from the first producing well at the stationary source, but no later than the end of well completion operation.

H. "Component" means a pump seal, flange, pressure relief device (including thief hatch or other

opening on a storage vessel), connector or valve that contains or contacts a process stream with hydrocarbons, except for components where process streams consist solely of glycol, amine, produced water or methanol.

I. "Connector" means flanged, screwed, or other joined fittings used to connect pipe line segments, tubing, pipe components (such as elbows, reducers, "T's" or valves) to each other; or a pipe line to a piece of equipment; or an instrument to a pipe, tube or piece of equipment. A common connector is a flange. Joined fittings welded completely around the circumference of the interface are not considered connectors for the purpose of this Part.

J. "Construction" means fabrication, erection, installation or relocation of a stationary source, including but not limited to temporary installations and portable stationary sources.

K. "Custody transfer" means the transfer of oil or natural gas after processing or treatment in the producing operation, or from a storage vessel or automatic transfer facility or other processing or treatment equipment including product loading racks, to a pipeline or any other form of transportation.

L. "Control device" means air pollution control equipment or emission reduction technologies that thermally combust, chemically convert, or otherwise destroy or recover air contaminants. Examples of control devices include but are not limited to open flares, enclosed combustion devices (ECDs), thermal oxidizers (TOs), vapor recovery units (VRUs), fuel cells, condensers, air fuel ratio controllers (AFRs), catalytic converters (oxidative, selective, and non-selective), or other emission reduction equipment. A control device may also include any other air pollution control equipment or emission reduction technologies approved by the department to comply with emission standards in this Part.

M. "Department" means the New Mexico environment department.

N. "Downtime" means the period of time when equipment is not in operation, or when a well is producing, and the control device is not in operation.

O. "Enclosed combustion device" means a combustion device where gaseous fuel is combusted in an enclosed chamber. This may include, but is not limited to an enclosed flare, reboiler, and heater.

P. "Existing" means constructed or reconstructed before the effective date of this Part and has not since been modified or reconstructed.

Q. "Gathering and boosting station" means a permanent combination of equipment that collects or moves natural gas, crude oil, condensate, or produced water between a wellhead site and a midstream oil and natural gas collection or distribution facility, such as a storage vessel battery or compressor station, or into or out of storage.

R. "Glycol dehydrator" means a device in which a liquid glycol absorbent, including ethylene glycol, diethylene glycol, or triethylene glycol, directly contacts a natural gas stream and absorbs water.

S. "Hydrocarbon liquid" means any naturally occurring, unrefined petroleum liquid and can include oil, condensate, and intermediate hydrocarbons.

T. "Liquid unloading" means the removal of accumulated liquid from the wellbore that reduces or stops natural gas production.

U. "Liquid transfer" means the loading and unloading of a hydrocarbon liquid or produced water between a storage vessel and tanker truck or tanker rail car for transport.

V. "Local distribution company custody transfer station" means a metering station where the local distribution (LDC) company receives a natural gas supply from an upstream supplier, which may be an interstate transmission pipeline or a local natural gas producer, for delivery to customers through the LDC's intrastate transmission or distribution lines.

W. "Natural gas compressor station" means one or more compressors designed to compress natural gas from well pressure to gathering system pressure before the inlet of a natural gas processing plant, or to move compressed natural gas through a transmission pipeline.

X. "Natural gas-fired heater" means an enclosed device using a controlled flame and with a primary purpose to transfer heat directly to a process material or to a heat transfer material for use in a process.

Y. "Natural gas processing plant" means the processing equipment engaged in the extraction of natural gas liquid from natural gas or fractionation of mixed natural gas liquid to a natural gas product, or both. A Joule-Thompson valve, a dew point depression valve, or an isolated or standalone Joule-Thompson skid is not a natural gas processing plant.

Z. "New" means constructed or reconstructed on or after the effective date of this Part.

AA. "Operator" means the person or persons responsible for the overall operation of a stationary source.

BB. "Optical gas imaging (OGI)" means an imaging technology that utilizes a high-sensitivity infrared camera designed for and capable of detecting hydrocarbons.

CC. "Owner" means the person or persons who own a stationary source or part of a stationary source.

DD. "Permanent pit" means a pit used for collection, retention, or storage of produced water or brine and is installed for longer than one year.

EE. "Pneumatic controller" means an instrument that is actuated using pressurized gas and used to control or monitor process parameters such as liquid level, gas level, pressure, valve position, liquid flow, gas flow, and temperature.

FF. "Pneumatic diaphragm pump" means a positive displacement pump powered by pressurized natural gas that uses the reciprocating action of flexible diaphragms in conjunction with check valves to pump a fluid. A pump in which a fluid is displaced by a piston driven by a diaphragm is not considered a diaphragm pump. A lean glycol circulation pump that relies on energy exchange with the rich glycol from the contactor is not considered a diaphragm pump.

GG. "Potential to emit (PTE)" means the maximum capacity of a stationary source to emit an air contaminant under its physical and operational design. The physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and a restriction on the hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is federally enforceable. The PTE for nitrogen dioxide shall be based on total oxides of nitrogen.

HH. "Produced water" means a fluid that is an incidental byproduct from drilling for or the production of oil and gas.

II. "Produced water management unit" means a recycling facility or a permanent pit that is a natural topographical depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to accumulate produced water and has a design storage capacity equal to or greater than 50,000 barrels.

JJ. "Qualified Professional Engineer" means an individual who is licensed by a state as a professional engineer to practice one or more disciplines of engineering and who is qualified by education, technical knowledge, and experience to make the specific technical certifications required under this Part.

KK. "Reciprocating compressor" means a piece of equipment that increases the pressure of process gas by positive displacement, employing linear movement of a piston rod.

LL. "Reconstruction" means a modification that results in the replacement of the components or addition of integrally related equipment to an existing source, to such an extent that the fixed capital cost of the new components or equipment exceeds fifty percent of the fixed capital cost that would be required to construct a comparable entirely new facility.

MM. "Recycling facility" means a stationary or portable facility used exclusively for the treatment, re-use, or recycling of produced water and does not include oilfield equipment such as separators, heater treaters, and scrubbers in which produced water may be used.

NN. "Responsible official" means one of the following:

(1) for a corporation: president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of the corporation if the representative is responsible for the overall operation of the source.

(2) for a partnership or sole proprietorship: a general partner or the proprietor, respectively.

OO. "Small business facility" means, for the purposes of this Part, a source that is independently owned or operated by a company that is a not a subsidiary or a division of another business, that employs no more than 10 employees at any time during the calendar year, and that has a gross annual revenue of less than $250,000. Employees include part-time, temporary, or limited service workers.

PP. "Startup" means the setting into operation of air pollution control equipment or process equipment.

QQ. "Stationary Source" or **"source"** means any building, structure, equipment, facility, installation (including temporary installations), operation, process, or portable stationary source that emits or may emit any air contaminant. Portable stationary source means a source that can be relocated to another operating site with limited dismantling and reassembly.

RR. "Storage vessel" means a single tank or other vessel that is designed to contain an accumulation of hydrocarbon liquid or produced water and is constructed primarily of non-earthen material including wood, concrete, steel, fiberglass, or plastic, which provide structural support, or a process vessel such as a surge control vessel, bottom receiver, or knockout vessel. A well completion vessel that receives recovered liquid from a well after commencement of operation for a period that exceeds 60 days is considered a storage vessel. A storage vessel does not include a vessel that is skid-mounted or permanently attached to a mobile source and located at the site for

less than 180 consecutive days, such as a truck railcar, or a pressure vessel designed to operate in excess of 204.9 kilopascals without emissions to the atmosphere.

SS. "Well workover" means the repair or stimulation of an existing production well for the purpose of restoring, prolonging, or enhancing the production of hydrocarbons.

TT. "Wellhead site" means the equipment directly associated with one or more oil wells or natural gas wells upstream of the natural gas processing plant. A wellhead site may include equipment used for extraction, collection, routing, storage, separation, treating, dehydration, artificial lift, combustion, compression, pumping, metering, monitoring, and product piping.

[20.2.50.7 NMAC - N, XX/XX/2021]

20.2.50.8 SEVERABILITY: If any provision of this Part, or the application of this provision to any person or circumstance is held invalid, the remainder of this Part, or the application of this provision to any person or circumstance other than those as to which it is held invalid, shall not be affected thereby.

[20.2.50.8 NMAC - N, XX/XX/2021]

20.2.50.9 CONSTRUCTION: This Part shall be liberally construed to carry out its purpose.

[20.2.50.9 NMAC - N, XX/XX/2021]

20.2.50.10 SAVINGS CLAUSE: Repeal or supersession of prior versions of this Part shall not affect administrative or judicial action initiated under those prior versions.

[20.2.50.10 NMAC - N, XX/XX/2021]

20.2.50.11 COMPLIANCE WITH OTHER REGULATIONS: Compliance with this Part does not relieve a person from the responsibility to comply with other applicable federal, state, or local laws, rules or regulations, including more stringent controls.

[20.2.50.11 NMAC - N, XX/XX/2021]

20.2.50.12 DOCUMENTS: Documents incorporated and cited in this Part may be viewed at the New Mexico environment department, air quality bureau.

[20.2.50.12 NMAC - N, XX/XX/2021]

[The Air Quality Bureau is located at 525 Camino de los Marquez, Suite 1, Santa Fe, New Mexico 87505.]

20.2.23.13-20.2.23.110 [**RESERVED**]

20.2.50.111 APPLICABILITY:

A. This Part applies to crude oil and natural gas production and processing equipment and operations that extract, collect, separate, dehydrate, store, process, transport, transmit, or handle hydrocarbon liquid or produced water in the areas specified in 20.2.50.2 NMAC and are located at wellhead sites, tank batteries, gathering and boosting sites, natural gas processing plants, and transmission compressor stations, up to the point of the local distribution company custody transfer station.

B. In determining if any source is subject to this Part, including a small business facility as defined in this Part, the owner or operator shall calculate the Potential to Emit (PTE) of such source and shall have the PTE calculation certified by a qualified professional engineer. The calculation shall be kept on file for a minimum of five years and shall be provided to the department upon request.

C. An owner or operator of a small business facility as defined in this Part shall comply with the requirements of this Part as specified in 20.2.50.125 NMAC.

D. Oil refinery and transmission pipelines are not subject to this Part.48

[20.2.50.111 NMAC - N, XX/XX/2021]

20.2.50.112 GENERAL PROVISIONS:

A. General requirements:

(1) Sources subject to emissions standards and requirements under this Part shall be operated and maintained consistent with manufacturer specifications, and good engineering and maintenance practices. The owner or operator shall keep manufacturer specifications and maintenance practices on file and make them available upon request by the department. For sources constructed prior to 1980 for which no manufacturer specifications and maintenance practices are available, the owner or operator shall develop and follow a maintenance schedule

sufficient to operate and maintain such units in good working order. The owner or operator shall keep such maintenance schedules on file and make them available to the department upon request.

(2) Sources subject to emission standards or requirements under this Part shall be operated to minimize emissions of air contaminants, including VOC and NO_x.

(3) Within two years of the effective date of this Part, owners and operators of a source requiring an Equipment Monitoring Tag (EMT) shall physically tag each unit with an EMT, the format of which shall be either RFID, QR, or bar code such that, when scanned it provides a unique identifier of the source. This unique identifier shall act as an index to the source's record of the data required by this Part. The EMT shall be maintained by the owner or operator, and data in the EMT shall provide at a minimum, the following information:

(a) unique unit identification number;

(b) location of the source;

(c) type of source (e.g., tank, VRU, dehydrator, pneumatic controller, etc.);

(d) for each source, the VOC (and NO_x, if applicable) PTE in lbs./hr. and tpy;

(e) for a control device, the controlled VOC and NO_x PTE in lbs./hr. and tpy;

(f) make, model, and serial number; and

(g) a link to the manufacturer's maintenance schedule or repair recommendations.

(4) The EMT shall be installed and maintained by the owner or operator of the facility.

(5) The EMT shall be of a format scannable by an owner or operator's authorized representatives and, upon scanning, shall provide unique identifier that shall index the source's record of the data required by this Part.

(6) The owner or operator shall manage the source's record of data in a database that is able to generate a Compliance Database Report (CDR). The CDR is an electronic report generated by the owner or operator's database and submitted to the department upon request. The format of the CDR shall be determined by the department.

(7) The CDR is a report distinct from the owner or operator's database. The department does not require access to the owner or operator's database, only the CDR.

(8) If read by the owner or operator's authorized representative, the EMT shall access the owner or operator's database record for that source.

(9) The owner or operator shall contemporaneously track each compliance event for each source subject to the EMT requirements of this Part, and shall comply with the following:

(a) data gathered during each monitoring or testing event shall be contemporaneously uploaded into the database as soon as practicable, but no later than three business days of each compliance event.

(b) data required by this Part shall be maintained in the database for at least five years.

(10) The department may request that an owner or operator retain a third party at their own expense to verify any data or information collected, reported, or recorded pursuant to this Part, and make recommendations to correct or improve the collection of data or information. The owner or operator shall submit a report of the verification and any recommendations made by the third party to the department by a date specified and implement the recommendations in the manner approved by the department.

B. Monitoring requirements:

(1) Sources subject to emission standards and monitoring (e.g. inspection, testing, parametric monitoring) requirements under this Part shall be inspected monthly to ensure proper maintenance and operation, unless a different schedule is specified in the Section applicable to that source type. If the equipment is shut down at the time of required periodic testing, monitoring, or inspection, the owner or operator shall not be required to restart the unit for the sole purpose of performing the testing, monitoring, or inspection, but shall note the shut down in the records kept for that equipment for that monitoring event.

(2) An owner or operator may submit for the department's review and approval an equally effective, enforceable, and equivalent alternative monitoring strategy. Such requests shall be made on an application form provided by the department. The department shall issue a letter approving or denying the requested alternative monitoring strategy. An owner or operator shall comply with the default monitoring requirements required under the applicable Section and shall not operate under an alternative monitoring strategy until it has been approved by the department.

(3) Each monitoring event (e.g. testing, inspection, parametric monitoring) shall be initiated by an initial scanning of the EMT, the results of which shall then be directly uploaded into the database or temporarily into the handheld or other device. Upon completion of the monitoring event, a final scanning of the

EMT shall terminate the monitoring event. At a minimum, the uploaded data shall include:

(a) date and time of the testing, monitoring, or inspection event;

(b) name of the personnel conducting the testing, monitoring, or inspection;

(c) identification number and type of unit;

(d) a description of any maintenance or repair activity conducted; and

(e) results of testing, monitoring, or inspection as required under this Part.

C. Recordkeeping requirements:

(1) Within three business days of a monitoring event, an electronic record shall be made of the monitoring event and shall include the following data:

(a) date and time of the testing, monitoring, or inspection event;

(b) name of the personnel conducting the testing, monitoring, or inspection;

(c) identification number and type of unit;

(d) a description of any maintenance or repair activity conducted; and

(e) results of any testing, monitoring, or inspections required under this Part.

(2) The owner or operator shall keep an electronic record required by this Part for five years. The department may treat loss of data or failure to maintain a record, including failure to transfer a record upon sale or transfer of ownership or operating authority, as a failure to collect the data.

(3) Before the transfer of ownership of equipment subject to this Part, the current owner or operator shall conduct and document a full compliance evaluation of such equipment. The documentation shall include a certification by a responsible official as to whether the equipment is in compliance with the requirements of this Part. The compliance determination shall be conducted no earlier than three months before the transfer of ownership. The owner or operator shall keep the full compliance evaluation and certification by the responsible official for for five years.

D. Reporting requirements: Within 24 hours of a request by the department, the owner or operator shall for each unit subject to the request, provide the requested information either by electronically submitting a CDR to the department's Secure Extranet Portal (SEP), or by other means and formats specified by the department in its request.

[20.2.50.112 NMAC - N, XX/XX/2021]

20.2.50.113 ENGINES AND TURBINES:

A. Applicability: Portable and stationary natural gas-fired spark ignition engines, compression ignition engines, and natural gas-fired combustion turbines located at wellhead sites, tank batteries, gathering and boosting sites, natural gas processing plants, and transmission compressor stations, with a rated horsepower greater than the horsepower ratings of Table 1, 2, and 3 of 20.2.50.113 NMAC are subject to the requirements of 20.2.50.113 NMAC.

B. Emission standards:

(1) The owner or operator of a portable or stationary natural gas-fired spark-ignition engine, compression ignition engine, or natural gas-fired combustion turbine shall ensure compliance with the emission standards by the dates specified in Subsection B of 20.2.50.113 NMAC.

(2) The owner or operator of an existing natural gas-fired spark-ignition engine shall complete an inventory of all existing engines by January 1, 2023, and shall prepare a schedule to ensure that each existing engine does not exceed the emission standards in table 1 of Paragraph (2) of Subsection B of 20.2.50.113 NMAC as follows:

(a) by January 1, 2025, the owner or operator shall ensure at least thirty percent of the company's existing engines meet the emission standards.

(b) by January 1, 2027, the owner or operator shall ensure at least an additional thirty-five percent of the company's existing engines meets the emission standards.

(c) by January 1, 2029, the owner or operator shall ensure that the remaining thirty-five percent of the company's existing engines meets the emission standards.

(d) in lieu of meeting the emission standards for an existing natural gas-fired spark ignition engine, an owner or operator may reduce the annual hours of operation of an engine such that the annual NOx and VOC emissions are reduced by at least ninety-five percent per year.

(e) Companies shall maintain a plan that demonstrates how the owner or operator will meet the emission standards as outlined in the schedule above.

Table 1 - EMISSION STANDARDS FOR NATURAL GAS-FIRED SPARK-IGNITION ENGINES CONSTRUCTED, RECONSTRUCTED, OR INSTALLED BEFORE THE EFFECTIVE DATE OF 20.2.50 NMAC.

Engine Type	Rated bhp	NO_x	CO	NMNEHC (as propane)
Lean-burn	**≤100**	**2.0 g/bhp-h**		
Lean-burn	**>100 to ≤500**	**1.0 g/bhp-h**		
Lean-burn	**>~~1,000~~ 500**	0.50 g/bhp-hr	47 ppmvd @ 15% O_2 or 93% reduction	0.70 g/bhp-hr
Rich-burn	**>100 to ≤500**	**0.25 g/bhp-h**		
Rich-burn	**>~~1,000~~ 500**	**~~0.50~~ 0.20** g/bhp-hr	0.60 g/bhp-hr	0.70 g/bhp-hr

(3) The owner or operator of a new natural gas-fired spark ignition engine shall ensure the engine does not exceed the emission standards in table 2 of Paragraph (3) of Subsection B of 20.2.50.113 NMAC upon startup.

Table 2 - EMISSION STANDARDS FOR NATURAL GAS-FIRED SPARK-IGNITION ENGINES CONSTRUCTED, RECONSTRUCTED, OR INSTALLED AFTER THE EFFECTIVE DATE OF 20.2.50 NMAC.

Engine Type	Rated bhp	NO_x	CO	NMNEHC (as propane)
Lean-burn	**≤500**	**1.0 g/bhp-h**		
Lean-burn	>500 - <1,000	0.50 g/bhp-hr	0.60 g/bhp-hr	0.70 g/bhp-hr
Lean-burn	≥1,000	0.30 g/bhp-hr uncontrolled or 0.05 g/bhp-hr with control	0.60 g/bhp-hr	0.70 g/bhp-hr
Rich-burn	**≤100**	**1.0 g/bhp-h**		
Rich-burn	**>100 to ≤500**	**0.25 g/bhp-h**		
Rich-burn	>500	**~~0.50~~ 0.20**[1] g/bhp-hr	0.60 g/bhp-hr	0.70 g/bhp-hr

(4) The owner or operator of a natural gas-fired spark ignition engine with NO_x emission control technology that uses ammonia or urea as a reagent shall ensure that the exhaust ammonia slip is limited to 10 ppmvd or less, corrected to fifteen percent oxygen.

(5) The owner or operator of a compression ignition engine shall ensure compliance with the following emission standards:

(a) a new portable or stationary compression ignition engine with a maximum design power output equal to or greater than 500 horsepower that is not subject to the emission standards under Subparagraph (b) of Paragraph (5) of Subsection B of 20.2.50.113 NMAC shall limit NO_x emissions to not more than nine g/bhp-hr upon startup.

(b) a stationary compression ignition engine that is subject to and complying with Subpart IIII of 40 CFR Part 60, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, is not subject to the requirements of Subparagraph (a) of Paragraph (5) of Subsection B of 20.2.50.113 NMAC.

(6) The owner or operator of a portable or stationary compression ignition engine with NO_x emission control technology that uses ammonia or urea as a reagent shall ensure that the exhaust ammonia slip is limited to 10 ppmvd or less, corrected to fifteen percent oxygen.

(7) The owner or operator of a stationary natural gas-fired combustion turbine with a maximum design rating equal to or greater than 1,000 bhp shall comply with the applicable emission standards for an existing, new, or reconstructed turbine listed in table 3 of Paragraph (7) of Subsection B of 20.2.50.113 NMAC.

Table 3 - EMISSION STANDARDS FOR STATIONARY COMBUSTION TURBINES

For each natural gas-fired combustion turbine constructed or reconstructed and installed before the effective date of 20.2.50 NMAC, the owner or operator shall ensure the turbine does not exceed the following emission standards no later than two years from the effective date of this Part:

[1] **The limits proposed by NPS are from Pennsylvania's general permit (GPA-5) requirements.**

Turbine Rating (bhp)	NO_x (ppmvd @15% O_2)	CO (ppmvd @ 15% O_2)	NMNEHC (as propane, ppmvd @15% O_2)
≥1,000 and <5,000	~~50~~**25**	50	9
≥5,000 and <15,000	~~50~~**15**	50	9
≥15,000	~~50~~**15**	50 or 93% reduction	5 or 50% reduction
≥60,000	**9** [2]		

[2] **The limits proposed by the NPS are based on Pennsylvania's general permit (GPA-5) requirements with the exception of the turbines >60,000 HP—this recommended limit is based Pennsylvania's proposed RACT III requirements.**

For each natural gas-fired combustion turbine constructed or reconstructed and installed on or after the effective date of 20.2.50 NMAC, the owner or operator shall ensure the turbine does not exceed the following emission standards upon startup:			
Turbine Rating (bhp)	NO_x (ppmvd @15% O_2)	CO (ppmvd @ 15% O_2)	NMNEHC (as propane, ppmvd @15% O_2)
≥1,000 and <5,000	25	25	9
≥5,000 and <15,900	15	10	9
≥15,900	9.0 Uncontrolled or 2.0 with Control	10 Uncontrolled or 1.8 with Control	5

(8) The owner or operator of a stationary natural gas-fired combustion turbine with NO_x emission control technology that uses ammonia or urea as a reagent shall ensure that the exhaust ammonia slip is limited to 10 ppmvd or less, corrected to fifteen percent oxygen.

(9) The owner or operator of an engine or turbine shall install an EMT on the engine or turbine in accordance with 20.2.50.112 NMAC.

(10) The owner or operator of an emergency use engine that is operated less than 100 hours per year is not subject to the emissions standards in this Part but shall be equipped with a non-resettable hour meter to monitor and record any hours of operation.

C. Monitoring requirements:

(1) Maintenance and repair for a spark-ignition engine, compression-ignition engine, and stationary combustion turbine shall meet the minimum manufacturer recommended maintenance schedule. The following maintenance, adjustment, replacement, or repair events for engines and turbines shall be documented as they occur:

(a) routine maintenance that takes a unit out of service for more than two hours during any 24-hour period; and

(b) unscheduled repairs that require a unit to be taken out of service for more than two hours during any 24-hour period.

(2) Catalytic converters (oxidative, selective and non-selective) and AFR controllers shall be maintained according to manufacturer or supplier recommended maintenance schedules, including replacement of oxygen sensors as necessary for oxygen-based controllers. During periods of catalytic converter or AFR controller maintenance, the owner or operator shall shut down the engine or turbine until the catalytic converter or AFR controller can be replaced with a functionally equivalent spare to allow the engine or turbine to return to operation.

(3) For equipment operated for 500 hours per year or more, compliance with the emission standards in Subsection B of 20.2.50.113 NMAC shall be demonstrated by performing an initial emissions test, followed by annual tests, for NO_x, CO, and non-methane non-ethane hydrocarbons (NMNEHC) using a portable analyzer or U.S. EPA reference method. For units with g/hp-hr emission standards, the engine load shall be calculated using the following equations:

$$\text{Load (Hp)} = \frac{\text{Fuel consumption (scf/hr) x Measured fuel heating value (LHV btu/scf)}}{\text{Manufacturer's rated BSFC (btu/bhp-hr) at 100\% load or best efficiency}}$$

$$\text{Load (Hp)} = \frac{\text{Fuel consumption (gal/hr) x Measured fuel heating value (LHV btu/gal)}}{\text{Manufacturer's rated BSFC (btu/bhp-hr) at 100\% load or best efficiency}}$$

Where: LVH = lower heating value, btu/scf, or btu/gal, as appropriate; and
BSFC = brake specific fuel consumption

(a) emissions testing events shall be conducted at ninety percent or greater of the unit's capacity. If the ninety percent capacity cannot be achieved, the monitoring and testing shall be conducted at the maximum achievable capacity or load under prevailing operating conditions. The load and the parameters used to calculate it shall be recorded to document operating conditions at the time of testing and shall be included with the test report.

(b) emissions testing utilizing a portable analyzer shall be conducted in accordance with the requirements of the current version of ASTM D 6522. If a portable analyzer has met a previously approved department criterion, the analyzer may be operated in accordance with that criterion until it is replaced.

(c) the default time period for a test run shall be at least 20 minutes.

(d) an emissions test shall consist of three separate runs, with the arithmetic mean of the results from the three runs used to determine compliance with the applicable emission standard.

(e) during emissions tests, pollutant and diluent concentration shall be monitored and recorded. Fuel flow rate shall be monitored and recorded if stack gas flow rate is determined utilizing U.S. EPA reference method 19. This information shall be included with the periodic test report.

(f) stack gas flow rate shall be calculated in accordance with U.S. EPA reference method 19 utilizing fuel flow rate (scf) determined by a dedicated fuel flow meter and fuel heating value (Btu/scf). The owner or operator shall provide a contemporaneous fuel gas analysis (preferably on the day of the test, but no earlier than three months before the test date) and a recent fuel flow meter calibration certificate (within the most recent quarter) with the final test report. Alternatively, stack gas flow rate may be determined by using U.S. EPA reference methods 1 through 4 or through the use of manufacturer provided fuel consumption rates.

(g) upon request by the department, an owner or operator shall submit a notification and protocol for an initial or annual emissions test.

(h) emissions testing shall be conducted at least once per calendar year. Emission testing required by Subparts GG, IIII, JJJJ, or KKKK of 40 CFR 60, or Subpart ZZZZ of 40 CFR 63, may be used to satisfy the emissions testing requirements if it meets the requirements of 20.2.50.113 NMAC and is completed at least once per calendar year.

(4) The owner or operator of equipment operated less than 500 hours per year shall monitor the hours of operation using a non-resettable hour meter and shall test the unit at least once per 8760 hours of operation in accordance with the emissions testing requirements in Paragraph (3) of Subsection C of 20.2.50.113 NMAC.

(5) An owner or operator of an emergency use engine operated for less than 100 hours per year shall monitor the hours of operation by a non-resettable hour meter.

(6) An owner or operator limiting the annual operating hours of an engine to meet the requirements of Paragraph (2) of Subsection B of 20.2.50.113 NMAC shall monitor the hours of operation by a non-resettable hour meter.

(7) Prior to monitoring, testing, inspection, or maintenance of an engine or turbine, the owner or operator shall scan the EMT, and the monitoring data entry shall be made in accordance with the requirements of 20.2.50.112 NMAC.

D. Recordkeeping requirements:

(1) The owner or operator of a spark ignition engine, compression ignition engine, or stationary combustion turbine shall maintain a record in accordance with 20.2.50.112 NMAC for the engine or turbine. The record shall include:

(a) the make, model, serial number, and EMT for the engine or turbine;

(b) a copy of the engine, turbine, or control device manufacturer recommended maintenance and repair schedule;

(c) all inspection, maintenance, or repair activity on the engine, turbine, and control device, including:

(i) the date and time of an inspection, maintenance or repair;

(ii) the date a subsequent analysis was performed (if applicable);

(iii) the name of the personnel conducting the inspection, maintenance or repair;

(iv) a description of the physical condition of the equipment as found during the inspection;

(v) a description of maintenance or repair activity conducted; and

(vi) the results of the inspection and any required corrective actions.

(2) The owner or operator of a spark ignition engine, compression ignition engine, or stationary combustion turbine shall maintain records of initial and annual emissions testing for the engine or turbine. The records shall include:

(a) the make, model, serial number, and EMT for the tested engine or turbine;

(b) the date and time of sampling or measurements;

(c) the date analyses were performed;

(d) the name of the personnel and the qualified entity that performed the analyses;

(e) the analytical or test methods used;

(f) the results of analyses or tests;

(g) for equipment operated less than 500 hours per year, the total annual hours of operation as recorded by the non-resettable hour meter; and

(h) operating conditions at the time of sampling or measurement.

(3) The owner or operator of an emergency use engine operated less than 100 hours per year shall record the total annual hours of operation as recorded by the non-resettable hour meter.

(4) The owner or operator limiting the annual operating hours of an engine to meet the requirements of Paragraph (2) of Subsection B of 20.2.50.113 NMAC shall record the hours of operation by a non-resettable hour meter. The owner or operator shall calculate and record the annual NOx and VOC emission calculation, based on the engine's actual hours of operation, to demonstrate the ninety-five percent emission reduction requirement is met.

E. Reporting requirements: The owner or operator shall comply with the reporting requirements in20.2.50.112 NMAC.

[20.2.50.113 NM–C - N, XX/XX/2021]

20.2.50.114 COMPRESSOR SEALS:

A. Applicability:

(1) Centrifugal compressors using wet seals and located at tank batteries, gathering and boosting sites, natural gas processing plants, or transmission compressor stations are subject to the requirements of 20.2.50.114 NMAC. Centrifugal compressors located at wellhead sites are not subject to the requirements of 20.2.50.114 NMAC.

(2) Reciprocating compressors located at tank batteries, gathering and boosting sites, natural gas processing plants, or transmission compressor stations are subject to the requirements of 20.2.50.114 NMAC. Reciprocating compressors located at wellhead sites are not subject to the requirements of 20.2.50.114 NMAC.

B. Emission standards:

(1) The owner or operator of an existing centrifugal compressor shall control VOC emissions from a centrifugal compressor wet seal fluid degassing system by at least ninety-five percent within two years of the effective date of this Part. Emissions shall be captured and routed via a closed vent system to a control device, recovery system, fuel cell, or a process stream.

(2) The owner or operator of an existing reciprocating compressor shall, either:

(a) replace the reciprocating compressor rod packing after every 26,000 hours of compressor operation or every 36 months, whichever is reached later. The owner or operator shall begin counting the hours of compressor operation toward the first replacement of the rod packing upon the effective date of this Part; or

(b) beginning no later than two years from the effective date of this Part, collect emissions from the rod packing under negative pressure and route them via a closed vent system to a control device, recovery system, fuel cell, or a process stream.

(3) The owner or operator of a new centrifugal compressor shall control VOC emissions from the centrifugal compressor wet seal fluid degassing system by at least ninety-eight percent upon startup. Emissions shall be captured and routed via a closed vent system to a control device, recovery system, fuel cell, or process stream.

(4) The owner or operator of a new reciprocating compressor shall, upon startup, either:

(a) replace the reciprocating compressor rod packing after every 26,000 hours of compressor operation, or every 36 months, whichever is reached later; or

(b) collect emissions from the rod packing under negative pressure and route them via a closed vent system to a control device, a recovery system, fuel cell or a process stream.

(5) The owner or operator of a centrifugal or reciprocating compressor shall install an EMT on the compressor in accordance with 20.2.50.112 NMAC.

(6) The owner or operator complying with the emission standards in Subsection B of 20.2.50.114 NMAC through use of a control device shall comply with the control device requirements in 20.2.50.115 NMAC.

C. Monitoring requirements:

(1) The owner or operator of a centrifugal compressor complying with Paragraph (1) or (3) of Subsection B of 20.2.50.114 NMAC shall maintain a closed vent system encompassing the wet seal fluid degassing system that complies with the monitoring requirements in 20.2.50.115 NMAC.

(2) The owner or operator of a reciprocating compressor complying with Subparagraph (a) of Paragraph (2) or Subparagraph (a) of Paragraph (4) of Subsection B of 20.2.50.114 NMAC shall continuously

monitor the hours of operation with a non-resettable hour meter and track the number of hours since initial startup or since the previous reciprocating compressor rod packing replacement.

(3) The owner or operator of a reciprocating compressor complying with Subparagraph (b) of Paragraph (2) or Subparagraph (b) of Paragraph (4) of Subsection B of 20.2.50.114 NMAC shall monitor the rod packing emissions collection system semiannually to ensure that it operates under negative pressure and routes emissions through a closed vent system to a control device, recovery system, fuel cell, or process stream.

(4) The owner or operator of a centrifugal or reciprocating compressor complying with the requirements in Subsection B of 20.2.50.114 NMAC through use of a closed vent system or control device shall comply with the monitoring requirements in 20.2.50.115 NMAC.

(5) The owner or operator of a centrifugal or reciprocating compressor shall comply with the monitoring requirements in 20.2.50.112 NMAC.

D. Recordkeeping requirements:

(1) The owner or operator of a centrifugal compressor using a wet seal fluid degassing system shall maintain a record of the following:

(a) the location of the centrifugal compressor;

(b) the date of construction, reconstruction, or modification of the centrifugal compressor;

(c) the monitoring required in Subsection C of 20.2.50.114 NMAC, including the time and date of the monitoring, the personnel conducting the monitoring, a description of any problem observed during the monitoring, and a description of any corrective action taken; and

(d) the type, make, model, and identification number of a control device used to comply with the control requirements in Subsection B of 20.2.50.114 NMAC.

(2) The owner or operator of a reciprocating compressor shall maintain a record of the following:

(a) the location of the reciprocating compressor;

(b) the date of construction, reconstruction, or modification of the reciprocating compressor; and

(c) the monitoring required in Subsection C of 20.2.50.114 NMAC, including:

(i) the number of hours of operation since initial startup or the last rod packing replacement;

(ii) the records of pressure in the rod packing emissions collection system; and

(iii) the time and date of the inspection, the personnel conducting the inspection, a notation of which checks required in Subsection C of 20.2.50.114 NMAC were completed, a description of problems observed during the inspection, and a description and date of corrective actions taken.

(3) The owner or operator of a centrifugal or reciprocating compressor complying with the requirements in Subsection B of 20.2.50.114 NMAC through use of a control device or closed vent system shall comply with the recordkeeping requirements in 20.2.50.115 NMAC.

(4) The owner or operator of a centrifugal or reciprocating compressor shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. Reporting requirements: The owner or operator of a centrifugal or reciprocating compressor shall comply with the reporting requirements in 20.2.50.112 NMAC.

[20.2.50.114 NM–C - N, XX/XX/2021]

20.2.50.115 CONTROL DEVICES:

A. Applicability: These requirements apply to control devices as defined in 20.2.50.7 NMAC and used to comply with the emission standards and emission reduction requirements in this Part.

B. General requirements:

(1) Control devices used to demonstrate compliance with this Part shall be installed, operated, and maintained consistent with manufacturer specifications, and good engineering and maintenance practices.

(2) Control devices shall be adequately designed and sized to achieve the control efficiency rates required by this Part and to handle fluctuations in emissions of VOC or NO_x.

(3) The owner or operator of a control device used to comply with the emission standards in this Part shall install an EMT on the control device in accordance with 20.2.50.112 NMAC.

(4) The owner or operator shall inspect control devices used to comply with this Part at least

monthly to ensure proper maintenance and operation. Prior to an inspection or monitoring event, the owner or operator shall scan the EMT and the required monitoring data shall be electronically captured in accordance with this Part.

(5) The owner or operator shall ensure that a control device used to comply with emission standards in this Part operates as a closed vent system that captures and routes VOC emissions to the control device, and that unburnt gas is not directly vented to the atmosphere.

(6) The owner or operator of a closed vent system for a centrifugal compressor wet seal fluid degassing system, reciprocating compressor, pneumatic controller or pump, or storage vessel using a control device or routing emissions to a process shall:

(a) ensure the control device or process is of sufficient design and capacity to accommodate all emissions from the affected sources;

(b) conduct an assessment to confirm that the closed vent system is of sufficient design and capacity to ensure that all emissions from the affected equipment are routed to the control device or process; and

(c) have the closed vent system certified by a qualified professional engineer or an in-house engineer with expertise regarding the design and operation of the closed vent system in accordance with Paragraphs (c)(i) and (ii) of this Section.

(i) The assessment of the closed vent system shall be prepared under the direction or supervision of a qualified professional engineer or an in-house engineer who signs the certification in Paragraph (c)(ii) of this Section.

(ii) the owner or operator shall provide the following certification, signed and dated by a qualified professional engineer or an in-house engineer: "I certify that the closed vent system design and capacity assessment was prepared under my direction or supervision. I further certify that the closed vent system design and capacity assessment was conducted, and this report was prepared pursuant to the requirements of this Part. Based on my professional knowledge and experience, and inquiry of personnel involved in the assessment, the certification submitted herein is true, accurate, and complete."

(7) The owner or operator shall keep manufacturer specifications for all control devices on file. The information shall include:

(a) manufacturer name, make, and model;

(b) maximum heating value for an open flare, ECD, or TO;

(c) maximum rated capacity for an open flare, ECD/TO, or VRU;

(d) gas flow range for an open flare, ECD, or TO; and

(e) designed destruction or vapor recovery efficiency.

C. Requirements for open flares:

(1) Emission standards:

(a) the flare shall combust the gas sent to the flare and combustion shall be maintained for the duration of time that gas is sent to the flare. The owner or operator shall not send gas to the flare in excess of the manufacturer maximum rated capacity.

(b) the owner or operator shall equip each new and existing flare (except those flares required to meet the requirements of Paragraph (C) of this Subsection) with a continuous pilot flame, an operational auto-igniter, or require manual ignition, and shall comply with the following:

(i) a flare with a continuous pilot flame or an auto-igniter shall be equipped with a system to ensure the flare is operated with a flame present at all times when gas is being sent to the flare.

(ii) the owner or operator of a flare with manual ignition shall inspect and ensure a flame is present upon initiating a flaring event.

(iii) a new flare controlling a continuous gas stream shall be equipped with a continuous pilot flame upon startup.

(iv) an existing flare controlling a continuous gas stream constructed before the effective date of this Part shall be equipped with a continuous pilot no later than one year after the effective date of this Part.

(c) an existing flare located at a site with an annual average daily production of equal to or less than 10 barrels of oil per day or an average daily production of 60,000 standard cubic feet of natural gas shall be equipped with an auto-ignitor, continuous pilot, or technology (e.g. alarm) that alerts the owner or operator of a flare malfunction, if replaced or reconstructed after the effective date of this Part.

(d) the owner or operator shall operate a flare with no visible emissions, except for

periods not to exceed a total of 30 seconds during any 15 consecutive minutes. The flare shall be designed so that an observer can, by means of visual observation from the outside of the flare or by other means such as a continuous monitoring device, determine whether it is operating properly.

(e) the owner or operator shall repair the flare within three business days of any alarm activation.

(2) Monitoring requirements:

(a) the owner or operator of a flare with a continuous pilot or auto igniter shall continuously monitor the presence of a pilot flame, or presence of flame during flaring if using an auto igniter, using a thermocouple equipped with a continuous recorder and alarm to detect the presence of a flame. An alternative equivalent technology alerting the owner or operator of failure of ignition of the gas stream may be used in lieu of a continuous recorder and alarm, if approved by the department;

(b) the owner or operator of a manually ignited flare shall monitor the presence of a flame using continuous visual observation during a flaring event;

(c) the owner or operator shall, at least quarterly, and upon observing visible emissions, perform a U.S. EPA method 22 observation while the flare pilot or auto igniter flame is present to certify compliance with visible emission requirements. The observation period shall be a minimum of 15 consecutive minutes;

(d) prior to an inspection or monitoring event, the EMT on the flare shall be scanned and the required monitoring data shall be electronically captured during the event in accordance with the monitoring requirements of 20.2.50.112 NMAC; and

(e) the owner or operator shall monitor the technology that alerts the owner or operator of a flare malfunction and any instances of technology or alarm activation.

(3) Recordkeeping requirements: The owner or operator of an open flare shall keep a record of the following:

(a) any instance of alarm activation, including the date and cause of alarm activation, action taken to bring the flare into a normal operating condition, the name of the personnel conducting the inspection, and any maintenance activity performed;

(b) the results of the U.S. EPA method 22 observations;

(c) the monitoring of the presence of a flame on a manual flare during a flaring event as required under Subparagraph (b) of Paragraph (2) of Subsection C of 20.2.50.115 NMAC;

(d) the results of the gas analysis for the gas being flared, including VOC content and heating value; and

(e) any instance of technology or alarm activation of a malfunctioning flare, including the date and cause of the activation, the action taken to bring the flare into normal operating condition, date of repair, name of the personnel conducting the inspection, and any maintenance activities performed.

(4) Reporting requirements: The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

D. Requirements for enclosed combustion devices (ECD) and thermal oxidizers (TO):

(1) Emission standards:

(a) the ECD/TO shall combust the gas sent to the ECD/TO. The owner or operator shall not send gas to the ECD/TO in excess of the manufacturer maximum rated capacity.

(b) the owner or operator shall equip an ECD/TO with a continuous pilot flame or an auto-igniter. Existing ECD/TO shall be equipped with a continuous pilot flame or an auto-igniter no later than one year after the effective date. New ECD/TO shall be equipped with a continuous pilot flame or an auto-igniter upon startup.

(c) ECD/TO with a continuous pilot flame or an auto-igniter shall be equipped with a system to ensure that the ECD/TO is operated with a flame present at all times when gas is sent to the ECD/TO. Combustion shall be maintained for the duration of time that gas is sent to the ECD/TO.

(d) the owner or operator shall operate an ECD/TO with no visible emissions, except for periods not to exceed a total of 30 seconds during any 15 consecutive minutes. The ECD/TO shall be designed so that an observer can, by means of visual observation from the outside of the ECD/TO or by other means such as a continuous monitoring device, determine whether it is operating properly.

(2) Monitoring requirements:

(a) the owner or operator of an ECD/TO with a continuous pilot or an auto igniter shall continuously monitor the presence of a pilot flame, or of a flame during combustion if using an auto-igniter, using a thermocouple equipped with a continuous recorder and alarm to detect the presence of a flame. An

alternative equivalent technology alerting the owner or operator of failure of ignition of the gas stream may be used in lieu of a continuous recorder and alarm, if approved by the department.

(b) the owner or operator shall, at least quarterly, and upon observing visible emissions, perform a U.S. EPA method 22 observation while the ECD/TO pilot flame or auto igniter flame is present to certify compliance with the visible emission requirements. The period of observation shall be a minimum of 15 consecutive minutes.

(c) prior to an inspection or monitoring event, the EMT on the unit shall be scanned and the required monitoring data shall be electronically captured during the monitoring event in accordance with the monitoring requirements of 20.2.50.112 NMAC.

(3) Recordkeeping requirements: The owner or operator of an ECD/TO shall keep records of the following:

(a) any instance of an alarm activation, including the date and cause of the activation, any action taken to bring the ECD/TO into normal operating condition, the name of the personnel conducting the inspection, and any maintenance activities performed;

(b) the result of the U.S. EPA method 22 observation; and

(c) the results of gas analysis for the gas being combusted, including VOC content and heating value.

(4) Reporting requirements: The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

E. Requirements for vapor recover units (VRU):

(1) Emission standards:

(a) the owner or operator shall operate the VRU as a closed vent system that captures and routes all VOC emissions directly back to the process or to a sales pipeline and does not vent to the atmosphere.

(b) the owner or operator shall control VOC emissions during startup, shutdown, maintenance, or other VRU downtime with a backup control device (e.g. flare, ECD, TO) or redundant VRU.

(2) Monitoring Requirements:

(a) the owner or operator shall comply with the standards for equipment leaks in 20.2.50.116 NMAC, or, alternatively, shall implement a program that meets the requirements of Subpart OOOOa of 40 CFR 60.

(b) prior to a VRU inspection or monitoring event, the EMT on the unit shall be scanned and the required monitoring data shall be electronically captured during the monitoring event in accordance with the monitoring requirements of 20.2.50.112 NMAC.

(3) Recordkeeping requirements: For a VRU inspection or monitoring event, the owner or operator shall record the result of the event in accordance with 20.2.50.112 NMAC, including the name of the personnel conducting the inspection, and any maintenance or repair activities required. The owner or operator shall record the type of redundant control device used during VRU downtime.

(4) Reporting requirements: The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

F. Recordkeeping requirements: The owner or operator of a control device shall maintain a record of the following:

(1) the certification of the closed vent system as required by this Part; and

(2) the information required in Paragraph (7) of Subsection B of 20.2.50.115 NMAC.

G. Reporting requirements: The owner or operator shall comply with the reporting requirements in45 20.2.50.112 NMAC.

[20.2.50.115 NM–C - N, XX/XX/2021]

20.2.50.116 EQUIPMENT LEAKS AND FUGITIVE EMISSIONS:

A. Applicability: Wellhead sites, tank batteries, gathering and boosting sites, gas processing plants, transmission compressor stations, and associated piping and components are subject to the requirements of 20.2.50.116 NMAC.

B. Emission standards: The owner or operator of oil and gas production and processing equipment located at wellhead sites, tank batteries, gathering and boosting sites, gas processing plants, or transmission compressor stations shall demonstrate compliance with this Part by performing the monitoring, recordkeeping, and reporting requirements specified in 20.2.50.116 NMAC.

C. Default Monitoring requirements: Owners and operators shall comply with the following

monitoring requirements and the monitoring requirements in 20.2.50.112 NMAC:

(1) The owner or operator of a facility with an annual average daily production of greater than 10 barrels of oil per day or an average daily production of greater than 60,000 standard cubic feet per day of natural gas shall, at least weekly, conduct audio, visual, and olfactory (AVO) inspections of thief hatches, closed vent systems, pumps, compressors, pressure relief devices, open-ended valves or lines, valves, flanges, connectors, piping, and associated equipment to identify defects and leaking components as follows:

(a) conduct a visual inspection for: cracks, holes, or gaps in piping or covers; loose connections; liquid leaks; broken or missing caps; broken, cracked or otherwise damaged seals or gaskets; broken or missing hatches; or broken or open access covers or other closure or bypass devices;

(b) conduct an audio inspection for pressure leaks and liquid leaks;

(c) conduct an olfactory inspection for unusual or strong odors;

(d) any positive detection during the AVO inspection shall be considered a leak; and

(e) a leak discovered by an AVO inspection shall be tagged with a visible tag and reported to management or their designee within three calendar days.

(2) The owner or operator of a facility with an annual average daily production of equal to or less than 10 barrels of oil per day or an average daily production of equal to or less than 60,000 standard cubic feet per day of natural gas shall, at least monthly, conduct an audio, visual, and olfactory (AVO) inspection of thief hatches, closed vent systems, pumps, compressors, pressure relief devices, open-ended valves or lines, valves, flanges, connectors, piping, and associated equipment to identify a defect and leaking component as specified in Subparagraphs (a) through (e) of Paragraph (1) of Subsection (C) of 20.2.50.116 NMAC.

(3) The owner or operator of the following facilities shall conduct an inspection using U.S. EPA method 21 or optical gas imaging (OGI) of thief hatches, closed vent systems, pumps, compressors, pressure relief devices, open-ended valves or lines, valves, flanges, connectors, piping, and associated equipment to identify leaking components at a frequency determined according to the following schedules:

(a) for wellhead sites or tank battery facilities:

(i) annually at facilities with a PTE less than two tpy VOC;

(ii) semi-annually at facilities with a PTE equal to or greater than two tpy and less than five tpy VOC; and

(iii) quarterly at facilities with a PTE equal to or greater than five tpy VOC.

(b) for gathering and boosting sites, gas processing plants, and transmission compressor stations:

(i) quarterly at facilities with a PTE less than 25 tpy VOC; and

(ii) monthly at facilities with a PTE equal to or greater than 25 tpy VOC.

(4) Inspections using U.S. EPA method 21 shall meet the following requirements:

(a) the instrument shall be calibrated before each day of its use by the procedures specified in U.S. EPA method 21;

(b) the instrument shall be calibrated with zero air (less than 10 ppm of hydrocarbon in air), and a mixture of methane or n-hexane and air at a concentration near, but nor more than, 10,000 ppm methane or n-hexane; and

(c) a leak is detected if the instrument records a measurement of 500 ppm or greater of hydrocarbon and the measurement is not associated with normal equipment operation, such as pneumatic device actuation and crank case ventilation.

(5) Inspections using OGI shall meet the following requirements:

(a) the instrument shall comply with the specifications, daily instrument checks, and leak survey requirements set forth in Subparagraphs (1) through (3) of Paragraph (i) of 40 CFR 60.18;

(b) a leak is detected if the emission images recorded by the OGI instrument are not associated with normal equipment operation, such as pneumatic device actuation or crank case ventilation.

(6) Components that are difficult, unsafe, or inaccessible to monitor, as determined by the following conditions, are not required to be inspected until it becomes feasible to do so:

(a) difficult to monitor components are those that require elevating the monitoring personnel more than two meters above a supported surface, or that cannot be reached via a wheeled scissor-lift or hydraulic type scaffold that allows access to components up to seven and six tenths meters (25 feet) above the ground;

(b) unsafe to monitor components are those that cannot be monitored without exposing monitoring personnel to an immediate danger as a consequence of completing the monitoring; and

(c) inaccessible to monitor components are those that are buried, insulated, or

obstructed by equipment or piping that prevents access to the components by monitoring personnel.

D. Alternative equipment leak monitoring plans: As an equivalent means of compliance with Subsection C of 20.2.50.116 NMAC, an owner or operator may comply with the equipment leak requirements through an alternative monitoring plan as follows:

(1) An owner or operator may comply with an individual alternative monitoring plan, subject to the following requirements:

(a) the proposed alternative monitoring plan shall be submitted to and approved by the department prior to conducting monitoring under that plan.

(b) the department may terminate an approved alternative monitoring plan if the department finds that the owner or operator failed to comply with a provision of the plan and failed to correct and disclose the violation to the department within 15 calendar days of identifying the violation.

(c) upon department denial or termination of an approved alternative monitoring plan, the owner or operator shall comply with the default monitoring requirements under Subsection C of 20.2.50.116 NMAC within 15 days.

(2) An owner or operator may comply with a pre-approved monitoring plan maintained by the department, subject to the following requirements:

(a) the owner or operator shall notify the department of the intent to conduct monitoring under a pre-approved monitoring plan, and identify which pre-approved plan will be used, at least 15 days prior to conducting monitoring under that plan.

(b) the department may terminate the use of a pre-approved monitoring plan by the owner or operator if the department finds that the owner or operator failed to comply with the provision of the plan and failed to correct and disclose the violation to the department within 15 calendar days of identifying the violation.

(c) upon department denial or termination of an approved alternative monitoring plan, the owner or operator shall comply with the default monitoring requirements under of Subsection C of 20.2.50.116.C NMAC within 15 days.

E. Repair requirements: For a leak detected pursuant to monitoring conducted under 20.2.50.116 NMAC:

(1) the owner or operator shall place a visible tag on the leaking component until the component has been repaired;

(2) leaks shall be repaired within 15 days of discovery, except for leaks detected using OGI, which shall be repaired within seven days of discovery;

(3) the equipment must be re-monitored no later than 15 days after discovery of the leak to demonstrate that it has been repaired; and

(4) if the leak cannot be repaired within 15 days of discovery, or within seven days for a leak detected using OGI, without a process unit shutdown, the leak may be designated "Repair delayed," and must be repaired before the end of the next process unit shutdown.

F. Recordkeeping requirements:

(1) The owner or operator shall keep a record of the following for all AVO, RM21, OGI, or alternative equipment leak monitoring inspection conducted as required under 20.2.50.116 NMAC, and shall provide the record to the department upon request:

(a) facility location;

(b) date of inspection;

(c) monitoring method (e.g. AVO, RM 21, OGI, alternative method approved by the department);

(d) name of the personnel performing the inspection;

(e) a description of any leak requiring repair or a note that no leak was found; and

(f) whether a visible flag was placed on the leak or not;

(2) The owner or operator shall keep the following record for any leak that is detected:

(a) the date the leak is detected;

(b) the date of attempt to repair;

(c) for a leak with a designation of "repair delayed" the following shall be recorded:

(i) reason for delay if a leak is not repaired within the required number of days after discovery;

(ii) signature of the authorized representative who determined that the repair could not be implemented without a process unit shutdown;

(d) date of successful leak repair;

(e) date the leak was monitored after repair and the results of the monitoring; and

(f) a description of the component that is designated as difficult, unsafe, or inaccessible to monitor, an explanation stating why the component was so designated, and the schedule for repairing and monitoring the component.

(3) For a leak detected using OGI, the owner or operator shall keep records of the specifications, the daily instrument check, and the leak survey requirements specified at 40 CFR 60.18(i)(1)-(3).

(4) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

G. Reporting requirements:

(1) The owner or operator shall certify the use of an alternative equipment leak monitoring plan under Subsection D of 20.2.50.116 NMAC to the department annually, if used.

(2) The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

[20.2.50.116 NMAC - N, XX/XX/2021]

20.2.50.117 NATURAL GAS WELL LIQUID UNLOADING:

A. Applicability: Liquid unloading operations including down-hole well maintenance events at natural gas wells are subject to the requirements of 20.2.50.117 NMAC.

B. Emission standards:

(1) The owner or operator of a natural gas well shall use best management practices during the life of the well to avoid the need for liquid unloading.

(2) The owner or operator of a natural gas well shall use the following best management practices during liquid unloading to minimize emissions, consistent with well site conditions and good engineering practices:

(a) reduce wellhead pressure before blowdown;

(b) monitor manual liquid unloading in close proximity to the well or via remote telemetry; and

(c) close well head vents to the atmosphere and return the well to normal production operation as soon as practicable.

(3) The owner or operator of a natural gas well shall use one of the following methods to reduce emissions during an unloading event:

(a) installation and use of a plunger lift;

(b) installation and use of an artificial lift engine; or

(c) installation and use of a control device.

(4) The owner or operator of a natural gas well shall install an EMT on the natural gas well in accordance with 20.2.50.112 NMAC.

C. Monitoring requirements:

(1) The owner or operator shall monitor the following parameters during liquid unloading:

(a) wellhead pressure;

(b) flow rate of the vented natural gas (to the extent feasible); and

(c) duration of venting to the storage vessel or atmosphere.

(2) The owner or operator shall calculate the volume and mass of VOC vented during a liquid unloading event.

(3) A liquid unloading event shall include the scanning of the EMT and monitoring data entry in accordance with the requirements of 20.2.50.112 NMAC.

(4) The owner or operator shall comply with the monitoring requirements in 20.2.50.112 NMAC.

D. Recordkeeping requirements:

(1) The owner or operator shall keep the following records for liquid unloading:

(a) identification number and location of the well;

(b) date the liquid unloading was performed;

(c) wellhead pressure;

(d) flow rate of the vented natural gas (to the extent feasible. If not feasible, the owner or operator shall use the maximum potential flow rate in the emission calculation);

(e) duration of venting to the storage vessel or atmosphere;

(f) a description of the management practice used to minimize release of VOC

emissions before and during the liquid unloading;

(g) the type of control device used to control VOC emissions during the liquid unloading; and

(h) a calculation of the VOC emissions vented during the liquid unloading based on the duration, volume, and mass of VOC.

(2) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. Reporting requirements: The owner or operator shall comply with the reporting requirements in20.2.50.112 NMAC.

[20.2.50.117 NMAC - N, XX/XX/2021]

20.2.50.118 GLYCOL DEHYDRATORS:

A. Applicability: Glycol dehydrators with a PTE equal to or greater than two tpy of VOC and located at wellhead sites, tank batteries, gathering and boosting sites, natural gas processing plants, and transmission compressor stations are subject to the requirements of 20.2.50.118 NMAC.

B. Emission standards:

(1) Existing glycol dehydrators with a PTE equal to or greater than two tpy of VOC shall achieve a minimum combined capture and control efficiency of ninety-five percent of VOC emissions from the still vent and flash tank no later than two years after the effective date. If a combustion control device is used, the combustion control device shall have a minimum design combustion efficiency of ninety-eight percent.

(2) New glycol dehydrators with a PTE equal to or greater than two tpy of VOC shall achieve a minimum combined capture and control efficiency of ninety-five percent of VOC emissions from the still vent and flash tank upon startup. If a combustion control device is used, the combustion control device shall have a minimum design combustion efficiency of ninety-eight percent.

(3) The owner or operator of a glycol dehydrator shall comply with the following requirements:

(a) still vent and flash tank emissions shall be routed at all times to the reboiler firebox, condenser, combustion control device, fuel cell, to a process point that either recycles or recompresses the emissions or uses the emissions as fuel, or to a VRU that reinjects the VOC emissions back into the process stream or natural gas gathering pipeline;

(b) if a VRU is used, it shall consist of a closed loop system of seals, ducts and a compressor that reinjects the natural gas into the process or the natural gas pipeline. The VRU shall be operational at least ninety-five percent of the time the facility is in operation, resulting in a minimum combined capture and control efficiency of ninety-five percent. The VRU shall be installed, operated, and maintained according to the manufacturer's specifications;

(c) still vent and flash tank emissions shall not be vented to the atmosphere; and

(d) the owner or operator of a glycol dehydrator shall install an EMT on the glycol dehydrator in accordance with 20.2.50.112 NMAC.

(4) an owner or operator complying with the requirements in Subsection B of 20.2.50.118 NMAC through use of a control device shall comply with the requirements in 20.2.50.115 NMAC.

(5) The requirements of Subsection B of 20.2.50.118 NMAC cease to apply when the uncontrolled actual annual VOC emissions from a new or existing glycol dehydrator are less than two tpy VOC.

C. Monitoring requirements:

(1) The owner or operator of a glycol dehydrator shall conduct an annual extended gas analysis on the dehydrator inlet gas and calculate the uncontrolled and controlled VOC emissions in tpy.

(2) The owner or operator of a glycol dehydrator shall inspect the glycol dehydrator, including the reboiler and regenerator, and the control device or process the emissions are being routed, semi-annually to ensure it is operating as initially designed and in accordance with the manufacturer recommended operation and maintenance schedule.

(3) An owner or operator complying with the requirements in Subsection B of 20.2.50.118 NMAC through the use of a control device shall comply with the monitoring requirements in 20.2.50.115 NMAC.

(4) Owners and operators shall comply with the monitoring requirements in 20.2.50.112 NMAC.

D. Recordkeeping requirements:

(1) The owner or operator of a glycol dehydrator shall maintain a record of the following:

(a) dehydrator location and identification number;

(b) glycol circulation rate, monthly natural gas throughput, and the date of the most recent throughput measurement;

(c) data and methodology used to estimate the PTE of VOC (must be a department approved calculation methodology);

(d) amount of controlled and uncontrolled VOC emissions in tpy;

(e) type, make, model, and identification number of the control device or process the emissions are being routed;

(f) date and results of any equipment inspection, including maintenance or repair activities required to bring the glycol dehydrator into compliance; and

(g) a copy of the glycol dehydrator manufacturer operation and maintenance recommendations.

(2) An owner or operator complying with the requirements in Paragraph (1) or (2) of Subsection B of 20.2.50.118 NMAC through use of a control device as defined in this Part shall comply with the recordkeeping requirements in 20.2.50.115 NMAC.

(3) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. Reporting requirements: The owner or operator shall comply with the reporting requirements in18 20.2.50.112 NMAC.

[20.2.50.118 NMAC - N, XX/XX/2021]

20.2.50.119 HEATERS:

A. Applicability: Natural gas-fired heaters with a rated heat input equal to or greater than 10 MMBtu/hour including heater treaters, heated flash separators, evaporator units, fractionation column heaters, and glycol dehydrator reboilers in use at wellhead sites, tank batteries, gathering and boosting sites, natural gas processing plants, and transmission compressor stations are subject to the requirements of 20.2.50.119 NMAC.

B. Emission standards:

(1) Natural gas-fired heaters shall comply with the emission limits in table 1 of 20.2.50.119 NMAC.

Table 1 - EMISSION STANDARDS FOR NO_x AND CO

Date of Construction:	NO_x (ppmvd @ 3% O_2)	CO (ppmvd @ 3% O_2)
Constructed or reconstructed before the effective date of 20.2.50 NMAC	30	300
Constructed or reconstructed on or after the effective date of 20.2.50 NMAC	30	130

(2) Existing natural gas-fired heaters shall comply with the requirements of 20.2.50.119 NMAC no later than one year after the effective date of this Part.

(3) New natural gas-fired heaters shall comply with the requirements of 20.2.50.119 NMAC upon startup.

(4) The owner or operator of a natural gas-fired heater shall install an EMT on the heater in accordance with 20.2.50.112 NMAC.

C. Monitoring requirements:

(1) The owner or operator shall:

(a) conduct emission testing for NOx and CO within 180 days of the compliance date specified in Paragraph (2) or (3) of Subsection B of 20.2.50.119 NMAC and at least every two years thereafter.

(b) inspect, maintain, and repair the heater in accordance with the manufacturer specifications at least once every two years following the applicable compliance date specified in 20.2.50.119 NMAC. The inspection, maintenance, and repair shall include the following:

(i) inspecting the burner and cleaning or replacing components of the burner as necessary;

(ii) inspecting the flame pattern and adjusting the burner as necessary to optimize the flame pattern consistent with the manufacturer specifications and good engineering practices;

(iii) inspecting the AFR controller and ensuring it is calibrated and functioning properly;

(iv) optimizing total emissions of CO consistent with the NO_x requirement, manufacturer specifications, and good combustion engineering practices; and

(v) measuring the concentrations in the effluent stream of CO in ppmvd and O_2 in volume percent before and after adjustments are made in accordance with Subparagraph (c) of Paragraph (2) of Subsection C of 20.2.50.119 NMAC.

(2) The owner or operator shall comply with the following periodic testing requirements:

(a) conduct three test runs of at least 20-minutes duration within ten percent of one-hundred percent peak, or the highest achievable, load;

(b) determine NO_X and CO emissions and O_2 concentrations in the exhaust with a portable analyzer used and maintained in accordance with the manufacturer specifications and following the procedures specified in the current version of ASTM D6522;

(c) if the measured NO_X or CO emissions concentrations are exceeding the emissions limits of table 1 of 20.2.50.119 NMAC, the owner or operator shall repeat the inspection and tune-up in Subparagraph (b) of Paragraph (1) of Subsection C of 20.2.50.119 NMAC within 30 days of the periodic testing; and

(d) if at any time the heater is operated in excess of the highest achievable load plus ten percent, the owner or operator shall perform the testing specified in Subparagraph (a) of Paragraph (2) of Subsection C of 20.2.50.119 NMAC within 60 days from the anomalous operation.

(3) When conducting periodic testing of a heater, the owner or operator shall follow the procedures in Paragraph (2) of Subsection C of 20.2.50.119 NMAC. An owner or operator may deviate from those procedures by submitting a written request to use an alternative procedure to the department at least 60 days before performing the periodic testing. In the alternative procedure request, the owner or operator must demonstrate the alternative procedure's equivalence to the standard procedure. The owner or operator must receive written approval from the department prior to conducting the periodic testing using an alternative procedure.

(4) Prior to a monitoring, inspection, maintenance, or repair event, the owner or operator shall scan the EMT and the required monitoring data shall be captured in accordance with this Part.

D. Recordkeeping requirements: The owner or operator shall maintain a record of the following:

(1) location of the heater;

(2) summary of the complete test report and the results of periodic testing; and

(3) inspections, testing, maintenance, and repairs, which shall include at a minimum:

(a) the date the inspection, testing, maintenance, or repair was conducted;

(b) name of the personnel conducting the inspection, testing, maintenance, or repair;

(c) concentrations in the effluent stream of CO in ppmv and O_2 in volume percent; and

(d) the results of the inspections and any the corrective action taken.

E. Reporting requirements: The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

[20.2.50.119 NMAC - N, XX/XX/2021]

20.2.50.120 HYDROCARBON LIQUID TRANSFERS:

A. Applicability: Hydrocarbon liquid transfers located at wellhead sites, tank batteries, gathering and boosting sites, natural gas processing plants, or transmission compressor stations are subject to the requirements of 20.2.50.120 NMAC beginning one year from the effective date of this Part.

B. Emission standards:

(1) The owner or operator of a hydrocarbon liquid transfer operation shall use vapor balance, vapor recovery, or a control device to control VOC emissions by at least ninety-eight percent when transferring liquid from a storage vessel to a transfer vessel, or when transferring liquid from a transfer vessel to a storage vessel.

(2) An owner or operator using vapor balance during a liquid transfer operation shall:

(a) transfer the vapor displaced from the vessel being loaded back to the vessel being emptied via a pipe or hose connected before the start of the transfer operation;

(b) ensure that the transfer does not begin until the vapor collection and return system is properly connected;

(c) ensure that connector pipes, hoses, couplers, valves, and pressure relief devices are maintained in a leak-free condition;

(d) check the liquid and vapor line connections for proper connections before commencing the transfer operation; and

(e) operate transfer equipment at a pressure that is less than the pressure relief valve setting of the receiving transport vehicle or storage vessel.

(3) Bottom loading or submerged filling shall be used for the liquid transfer.

(4) Connector pipes and couplers shall be maintained in a leak-free condition.

(5) Connections of hoses and pipes used during liquid transfer operations shall be supported on drip trays that collect any leaks, and the materials collected shall be returned to the process or disposed of in a manner compliant with state law.

(6) Liquid leaks that occur shall be cleaned and disposed of in a manner that prevents emissions to the atmosphere, and the material collected shall be returned to the process or disposed of in a manner compliant with state law.

(7) An owner or operator complying with Paragraph (1) of Subsection B of 20.2.50.120 NMAC through use of a control device shall comply with the control device requirements in 20.2.50.115 NMAC.

C. Monitoring requirements:

(1) The owner or operator shall visually inspect the transfer equipment during a transfer operation to ensure that liquid transfer lines, hoses, couplings, valves, and pipes are not dripping or leaking. Leaking components shall be repaired to prevent dripping or leaking before the next transfer operation.

(2) The owner or operator of a liquid transfer operation controlled by a control device must follow manufacturer recommended operation and maintenance procedures for the device.

(3) Tanker trucks and tanker rail cars used in liquid transfer service shall be tested annually for vapor tightness in accordance with the following test methods and vapor tightness standards:

(a) method 27 of appendix A of 40 CFR Part 60. Conduct the test using a time period (t) for the pressure and vacuum tests of five minutes. The initial pressure (Pi) for the pressure test shall be 460 mm H_2O (18 inches H_2O), gauge. The initial vacuum (Vi) for the vacuum test shall be 150 mm H_2O (six inches H_2O) gauge. The maximum allowable pressure and vacuum changes (Δp, Δv) are shown in table 1 of 20.2.50.120 NMAC.

Table 1 - ALLOWABLE CARGO TANK TEST PRESSURE OR VACUUM CHANGE

Cargo tank or compartment capacity, liters (gallons)	Allowable vacuum change (Δv) in five minutes, mm H_2O (inches H_2O)	Allowable pressure change (Δp) in five minutes, mm H_2O (inches H_2O)
< 3,785 (< 1,000)	64 (2.5)	102 (4.0)
3,785 < 5,678 (1,000 < 1,500)	51 (2.0)	89 (3.5)
5,678 < 9,464 (1,500 < 2,500)	38 (1.5)	76 (3.0)
> 9,464 (> 2,500)	25 (1.0)	64 (2.5)

(b) pressure test the tanker truck or tanker railcar tank's internal vapor valve as follows:

(i) after completing the tests under Subparagraph (a) of Paragraph (3) of Subsection C of 20.2.50.120 NMAC, use the procedures in method 27 to re-pressurize the tank to 460 mm H_2O (18 inches H_2O) gauge. Close the tank's internal vapor valve, thereby isolating the vapor return line and manifold from the tank.

(ii) relieve the pressure in the vapor return line to atmospheric pressure, then reseal the line. After five minutes, record the gauge pressure in the vapor return line and manifold. The maximum allowable five-minute pressure increase is 130 mm H_2O (five inches H_2O).

(4) Owners and operators complying with Paragraph (1) of Subsection B of 20.2.50.120 NMAC through use of a control device shall comply with the monitoring requirements in 20.2.50.115 NMAC.

(5) Owners and operators shall comply with the monitoring requirements in 20.2.50.112 NMAC.

D. Recordkeeping requirements:

(1) The owner or operator shall maintain a record of the location of the storage vessel and if using a control device, the type, make, and model of the control device:

(2) The owner or operator shall maintain a record of the inspections and testing required in Subsection C of 20.2.50.120 NMAC and shall include the following:

(a) the time and date of the inspection and testing;

(b) the name of the personnel conducting the inspection and testing;

(c) a description of any problem observed during the inspection and testing; and

50 **(d)** the results of the inspection and testing and a description of any repair or

corrective action taken.

(3) The owner or operator shall maintain a record for each site of the annual total hydrocarbon liquid transferred and annual total VOC emissions. Each calendar year, the owner or operator shall create a company-wide record summarizing the annual total hydrocarbon liquid transferred and the annual total calculated VOC emissions.

(4) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. Reporting requirements: The owner or operator shall comply with the reporting requirements in9 20.2.50.112 NMAC.

[20.2.50.120 NMAC - N, XX/XX/2021]

20.2.50.121 PIG LAUNCHING AND RECEIVING:

A. Applicability: Pipeline pig launching and receiving operations located within or outside of the property boundary of wellhead sites, tank batteries, gathering and boosting sites, natural gas processing plants, and transmission compressor stations are subject to the requirements of 20.2.50.121 NMAC.

B. Emission standards:

(1) Owners and operators of pipeline pig launching and receiving operations with a PTE equal to or greater than one tpy of VOC shall capture and reduce VOC emissions by at least ninety-eight percent, beginning on the effective date of this Part.

(2) The owner or operator conducting the pig launching and receiving operation shall:

(a) employ best management practices to minimize the liquid present in the pig receiver chamber and to prevent emissions from the pig receiver chamber to the atmosphere after receiving the pig in the receiving chamber and before opening the receiving chamber to the atmosphere;

(b) employ a method to prevent emissions, such as installing a liquid ramp or drain, routing a high-pressure chamber to a low-pressure line or vessel, using a ball valve type chamber, or using multiple pig chambers;

(c) recover and dispose of receiver liquid in a manner that prevents emissions to the atmosphere; and

(d) ensure that the material collected is returned to the process or disposed of in a manner compliant with state law.

(3) The emission standards in Paragraphs (1) and (2) of Subsection B of 20.2.50.121 NMAC cease to apply to a pipeline pig launching and receiving operation if the uncontrolled actual annual VOC emissions of the operation are less than one half ton per year of VOC.

(4) An owner or operator complying with Paragraph (2) of Subsection B of 20.2.50.121 NMAC through use of a control device shall comply with the control device requirements in 20.2.50.115 NMAC.

C. Monitoring requirements:

(1) The owner or operator of pig launching and receiving operations shall monitor the type and volume of liquid cleared.

(2) The owner or operator of pig launching and receiving operations shall inspect the equipment for a leak using RM 21 or OGI immediately before the commencement and immediately after the conclusion of the pig launching or receiving operation, and according to the requirements in 20.2.50.116 NMAC.

(3) An owner or operator complying with Paragraph (1) of Subsection B of 20.2.50.121 NMAC through use of a control device shall comply with the monitoring requirements in 20.2.50.115 NMAC.

(4) The owner or operator shall comply with the monitoring requirements in 20.2.50.112 NMAC.

D. Recordkeeping requirements:

(1) The owner or operator of pig launching and receiving operations shall maintain a record of the following:

(a) the pigging operation, including the date and time of the pigging operation and the type and volume of liquid cleared;

(b) the data and methodology used to estimate the actual emissions to the atmosphere and used to estimate the PTE; and

(c) the type of control device and its location, make, and model.

(2) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. Reporting requirements: The owner or operator shall comply with the reporting requirements in

20.2.50.112 NMAC.
[20.2.50.121 NMAC - N, XX/XX/2021]

20.2.50.122 PNEUMATIC CONTROLLERS AND PUMPS:

A. Applicability: Natural gas-driven pneumatic controllers and pumps located at wellhead sites, tank batteries, gathering and boosting sites, natural gas processing plants, and transmission compressor stations are subject to the requirements of 20.2.50.122 NMAC.

B. Emission standards:

(1) A new natural gas-driven pneumatic controller or pump shall comply with the requirements of 20.2.50.122 NMAC upon startup.

(2) An existing natural gas-driven pneumatic pump shall comply with the requirements of 20.2.50.122 NMAC within three years of the effective date of this Part.

(3) An existing natural gas-driven pneumatic controller shall comply with the requirements of 20.2.50.122 NMAC according to the following schedule:

Table 1 – WELLHEAD SITES, TANK BATTERIES, GATHERING AND BOOSTING FACILITIES

Total Historic Percentage of Non-Emitting Controllers	Total Required Percentage of Non-Emitting Controllers by January 1, 2024	Total Required Percentage of Non-Emitting Controllers by January 1, 2027	Total Required Percentage of Non-Emitting Controllers by January 1, 2030
> 75 %	80%	85%	90%
> 60-75 %	80%	85%	90%
> 40-60 %	65%	70%	80%
> 20-40 %	45%	70%	80%
0-20 %	25%	65%	80%

Table 2 – NATURAL GAS COMPRESSOR STATIONS AND GAS PROCESSING PLANTS

Total Historic Percentage of Non-Emitting Controllers	Total Required Percentage of Non-Emitting Controllers by January 1, 2024	Total Required Percentage of Non-Emitting Controllers by January 1, 2027	Total Required Percentage of Non-Emitting Controllers by January 1, 2030
> 75 %	80%	95%	98%
> 60-75 %	80%	95%	98%
> 40-60 %	65%	95%	98%
> 20-40 %	50%	95%	98%
0-20 %	35%	95%	98%

(4) Standards for natural gas-driven pneumatic controllers.

(a) new pneumatic controllers shall have an emission rate of zero.

(b) existing pneumatic controllers with access to commercial line electrical power shall have an emission rate of zero.

(c) existing pneumatic controllers shall meet the required percentage of non-emitting controllers within the deadlines in tables 1 and 2 of Paragraph (3) of Subsection B of 20.2.50.122 NMAC, and shall comply with the following:

(i) by January 1, 2023, the owner or operator shall determine the total controller count for all controllers at all of the owner or operator's affected facilities that commenced construction before the effective date of this Part. The total controller count must include all emitting pneumatic controllers and all non-emitting pneumatic controllers, except that pneumatic controllers necessary for a safety or process purpose that cannot otherwise be met without emitting natural gas shall not be included in the total controller count.

(ii) determine which controllers in the total controller count are non-emitting and sum the total number of non-emitting controllers and designate those as total historic non-emitting controllers.

(iii) determine the total historic non-emitting percent of controllers by dividing the total historic non-emitting controller count by the total controller count and multiplying by 100.

(iv) based on the percent calculated in (iii) above, the owner or operator

shall determine which provisions of tables 1 and 2 of Paragraph (3) of Subsection B of 20.2.50.122 NMAC apply and the replacement schedule the owner or operator must meet.

(v) if an owner or operator meets at least seventy-five percent total non-emitting controllers by January 1, 2025, the owner or operator has satisfied the requirements of tables 1 and 2 of Paragraph (3) of Subsection B of 20.2.50.122 NMAC.

(vi) if after January 1, 2027, an owner or operator's remaining pneumatic controllers are not cost-effective to retrofit, the owner or operator shall submit a cost analysis of retrofitting those remaining units to the department. The department shall review the cost analysis and determine whether those units qualify for a waiver from meeting additional retrofit requirements.

(d) a pneumatic controller with a bleed rate greater than six standard cubic feet per hour is permitted when the owner or operator has demonstrated that a higher bleed rate is required based on functional needs, including response time, safety, and positive actuation. An owner or operator that seeks to maintain operation of an emitting pneumatic controller must prepare and document the justification for the safety or process purposes prior to the installation of a new emitting controller or the retrofit of an existing controller. The justification shall be certified by a qualified professional engineer.

(5) Standards for natural gas-driven pneumatic pumps.

(a) pneumatic pumps located at a natural gas processing plants shall have an emission rate of zero.

(b) pneumatic pumps located at a wellhead sites, tank batteries, gathering and boosting sites, or transmission compressor stations with access to commercial line electrical power shall have an emission rate of zero.

(c) owners and operators of pneumatic pumps located at wellhead sites, tank batteries, gathering and boosting sites, or transmission compressor stations without access to commercial line electrical power shall reduce VOC emissions from the pneumatic pumps by ninety-five percent if it is technically feasible to route emissions to a control device, fuel cell, or process. If there is a control device available onsite but it is unable to achieve a ninety-five percent emission reduction, and it is not technically feasible to route the pneumatic pump emissions to a fuel cell or process, the owner or operator shall route the pneumatic pump emissions to the control device.

(6) The owner or operator of a pneumatic controller or pump shall install an EMT on the controller or pump in accordance with 20.2.50.112 NMAC.

C. Monitoring requirements:

(1) Pneumatic controllers or pumps with a natural gas bleed rate equal to zero are not subject to the monitoring requirements in Subsection C of 20.2.5.122 NMAC.

(2) The owner or operator of a pneumatic controller subject to the deadlines set forth in tables 1 and 2 of Paragraph (3) of Subsection B of 20.2.50.122 NMAC shall monitor the compliance status of each subject controller at each facility.

(3) The owner or operator of a pneumatic controller with a bleed rate greater than zero shall, on a monthly basis, scan the controller and conduct an AVO inspection, and shall also inspect the pneumatic controller, perform necessary maintenance (such as cleaning, tuning, and repairing a leaking gasket, tubing fitting and seal; tuning to operate over a broader range of proportional band; eliminating an unnecessary valve positioner), and maintain the pneumatic controller according to manufacturer specifications to ensure that the VOC emissions are minimized.

(4) The EMT shall be linked to a database that contains the following:

(a) pneumatic controller identification number;

(b) type of controller (continuous or intermittent);

(c) if continuous, design continuous bleed rate in standard cubic feet per hour;

(d) if intermittent, bleed volume per intermittent bleed in standard cubic feet; and

(e) design annual bleed in standard cubic feet per year.

(5) The owner or operator of a pneumatic pump with a bleed rate greater than zero shall, on a monthly basis, scan the pump and conduct an AVO inspection and shall also inspect the pneumatic pump and perform necessary maintenance, and maintain the pneumatic pump according to manufacturer specifications to ensure that the VOC emissions are minimized.

(6) The owner or operator shall comply with the monitoring requirements in 20.2.50.112 NMAC.

D. Recordkeeping requirements:

(1) Pneumatic controllers and pumps with a natural gas bleed rate equal to zero are not

subject to the recordkeeping requirements in Subsection D of 20.2.5.122 NMAC.

(2) The owner or operator shall maintain a record of the total controller count for all controllers at all of the owner's or operator's affected facilities that commenced operation before the effective date of this Part. The total controller count must include all emitting and non-emitting pneumatic controllers.

(3) The owner or operator shall maintain a record of the total count of pneumatic controllers necessary for a safety or process purpose that cannot otherwise be met without emitting VOC.

(4) The owner or operator of a pneumatic controller subject to the requirements in tables 1 and 2 of Paragraph (3) of shall generate a schedule for meeting the compliance deadlines for each pneumatic controller. The owner or operator shall keep a record of the compliance status of each subject controller.

(5) The owner or operator shall maintain an electronic record for each pneumatic controller with a natural gas bleed rate greater than zero. The record shall include the following:

(a) pneumatic controller identification number;

(b) inspection dates;

(c) name of the personnel conducting the inspection;

(d) AVO inspection result;

(e) AVO level discrepancy in continuous or intermittent bleed rate;

(f) maintenance date and maintenance activity; and

(g) a record of the justification and certification required in Subparagraph (d) of Paragraph (4) of Subsection B of 20.2.50.122 NMAC.

(6) The owner or operator of a natural gas-driven pneumatic controller with a bleed rate greater than six standard cubic feet per hour shall maintain a record in the EMT database of the pneumatic controller documenting why a bleed rate greater than six scf/hr is necessary, as required in Subsection B of 20.2.50.122 NMAC.

(7) The owner or operator shall maintain a record in the EMT database for a natural gas-driven pneumatic pump with an emission rate greater than zero and the associated pump number at the facility. The record shall include:

(a) for a natural gas-driven pneumatic pump in operation less than 90 days per calendar year, a record for each day of operation during the calendar year.

(b) a record of any control device designed to achieve at least a ninety-five percent emission reduction, including an evaluation or manufacturer specifications indicating the percentage reduction the control device is designed to achieve.

(c) records of the engineering assessment and certification by a qualified professional engineer that routing pneumatic pump emissions to a control device, fuel cell, or process is technically infeasible.

(8) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. Reporting requirements: The owner or operator shall comply with the reporting requirements in20.2.50.112 NMAC.

[20.2.50.122 NMAC - N, XX/XX/2021]

20.2.50.123 STORAGE VESSELS

A. Applicability: Storage vessels with an uncontrolled PTE equal to or greater than two tpy of VOC and located at wellhead sites, tank batteries, gathering and boosting sites, natural gas processing plants, or transmission compressor stations are subject to the requirements of 20.2.50.123 NMAC.

B. Emission standards:

(1) An existing storage vessel with a PTE equal to or greater than two tpy and less than 10 tpy of VOC shall have a combined capture and control of VOC emissions of at least ninety-five percent no later than three years after the effective date of this Part.

(2) An existing storage vessel with a PTE equal to or greater than 10 tpy of VOC shall have a combined capture and control of VOC emissions of at least ninety-eight percent no later than one year after the effective date of this Part.

(3) A new storage vessel with a PTE equal to or greater than two tpy and less than 10 tpy of VOC shall have a combined capture and control of VOC emissions of at least ninety-five percent upon startup.

(4) A new storage vessel with a PTE equal to or greater than 10 tpy of VOC shall have a combined capture and control of VOC emissions of at least ninety-eight percent upon startup.

(5) The emission standards in Subsection B of 20.2.50.123 NMAC cease to apply to a

storage vessel if the uncontrolled actual annual VOC emissions decrease to less than two tpy.

(6) If a control device is not installed by the date specified in Paragraphs (1) through (4) of Subsection B of 20.2.50.123 NMAC, an owner or operator may comply with Subsection B of 20.2.50.123 NMAC by shutting in the well supplying the storage vessel by the applicable date, and not resuming production from the well until the control device is installed and operational.

(7) The owner or operator of a new or existing storage vessel with a thief hatch shall install a control device that allows the thief hatch to open sufficiently to relieve overpressure in the vessel and to automatically close once the vessel overpressure is relieved. The thief hatch shall be equipped with a manual lock-open safety device to ensure positive hatch opening during times of human ingress. The lock-open safety device shall only be engaged when an owner or operator are present and during an active ingress activity.

(8) The owner or operator of a new or existing storage vessel shall install an EMT on the storage vessel in accordance with 20.2.50.112 NMAC.

(9) An owner or operator complying with Paragraphs (1) through (4) of Subsection B of 20.2.50.123 NMAC through use of a control device shall comply with the control device operational requirements in 20.2.50.115 NMAC.

C. Monitoring requirements: The owner or operator of a storage vessel shall:

(1) monitor on a monthly basis the total monthly liquid throughput (in barrels) and the upstream separator pressure (in psig). When a storage vessel is unloaded less frequently than monthly, the throughput and separator pressure monitoring shall be conducted before the storage vessel is unloaded;

(2) conduct an AVO inspection on a weekly basis. If the storage vessel is unloaded less frequently than weekly, the AVO inspection shall be conducted before the storage vessel is unloaded;

(3) inspect the vessel monthly to ensure compliance with the requirements of 20.2.50.123 NMAC. The inspection shall include a check to ensure the vessel does not have a leak;

(4) scan the EMT and enter the required monitoring data in accordance with the requirements25 of 20.2.50.112 NMAC;

(5) comply with the monitoring requirements in 20.2.50.115 NMAC if using a control device to comply with the requirements in Paragraphs (1) through (4) of Subsection B of 20.2.50.123 NMAC; and

(6) comply with the monitoring requirements in 20.2.50.112 NMAC.

D. Recordkeeping requirements:

(1) The owner or operator shall, on a monthly basis, maintain a record in accordance with 20.2.50.112 NMAC for a storage vessel. The record shall include:

(a) the vessel location and identification number;

(b) monthly liquid throughput and the most recent date of measurement;

(c) the average monthly upstream separator pressure;

(d) the data and methodology used to calculate the PTE of VOC (the calculation methodology shall be department approved);

(e) the controlled and uncontrolled VOC emissions (tpy); and

(f) the type, make, model, and identification number of any control device.

(2) A record of liquid throughput in shall be verified by a dated delivery receipt from the purchaser of the hydrocarbon liquid, the metered volume of hydrocarbon liquid sent downstream, or other proof of transfer.

(3) A record of the inspection required in Subsection C of 20.2.50.123 NMAC shall include:

(a) the time and date of the inspection;

(b) the personnel conducting the inspection;

(c) a notation that the required leak check was completed;

(d) a description of any problem observed during the inspection; and

(e) a description and date of any corrective action taken.

(4) An owner or operator complying with the requirements in Paragraphs (1) through (4) of Subsection B of 20.2.50.123 NMAC through use of a control device shall comply with the recordkeeping requirements in 20.2.50.115 NMAC.

(5) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. Reporting requirements:

(1) An owner or operator complying with the requirements in Paragraphs (1) through (4) of Subsection B of 20.2.50.123 NMAC through use of a control device shall comply with the reporting requirements in 20.2.50.15 NMAC.

(2) The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

[20.2.50.123 NMAC - N, XX/XX/2021]

20.2.50.124 WELL WORKOVERS

A. Applicability: Workovers performed at oil and natural gas wells are subject to the requirements of 20.2.50.124 NMAC as of the effective date of this Part.

B. Emission standards: The owner or operator of an oil or natural gas well shall use the following best management practices during a workover to minimize emissions, consistent with the well site condition and good engineering practices:

(1) reduce wellhead pressure before blowdown to minimize the volume of natural gas vented;

(2) monitor manual venting at the well until the venting is complete; and

(3) route natural gas to the sales line, if possible.

C. Monitoring requirements:

(1) The owner or operator shall monitor the following parameters during a workover:

(a) wellhead pressure;

(b) flow rate of the vented natural gas (to the extent feasible); and

(c) duration of venting to the atmosphere.

(2) The owner or operator shall calculate the volume and mass of VOC vented during a workover.

(3) The owner or operator shall comply with the monitoring requirements in 20.2.50.112 NMAC.

D. Recordkeeping requirements:

(1) The owner or operator shall keep the following record for a workover:

(a) identification number and location of the well;

(b) date the workover was performed;

(c) wellhead pressure;

(d) flow rate of the vented natural gas to the extent feasible, and if measurement of the flow rate is not feasible, the owner or operator shall use the maximum potential flow rate in the emission calculation;

(e) duration of venting to the atmosphere;

(f) description of the management practices used to minimize release of VOC before and during the workover; and

(g) calculation of the VOC emissions vented during the workover based on the duration, volume, and mass of VOC.

(2) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. Reporting requirements

(1) The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

(2) If it is not feasible to prevent VOC emissions from being emitted to the atmosphere from a workover event, the owner or operator shall notify by certified mail all residents located within one-quarter mile of the well of the planned workover at least three calendar days before the workover event.

[20.2.50.124 NMAC - N, XX/XX/2021]

20.2.50.125 SMALL BUSINESS FACILITIES

A. Applicability: Small business facilities as defined in this Part are subject to the requirements of49 20.2.50.125 NMAC.

B. General requirements:

(1) The owner or operator shall ensure that all equipment is operated and maintained consistent with manufacturer specifications, and good engineering and maintenance practices. The owner or operator shall keep manufacturer specifications and maintenance practices on file and make them available to the department upon request.

(2) The owner or operator shall calculate the VOC and NO_x emissions from the facility on an annual basis. The calculation shall be based on the actual production or processing rates of the facility.

(3) The owner or operator shall maintain a database of company-wide VOC and NO_x emission calculations for all subject facilities and associated equipment and shall update the database annually.

(4) The owner or operator shall comply with Paragraph (10) of Subsection A of 20.2.50.112 NMAC if requested by the department.

C. Monitoring requirements: The owner or operator shall comply with the requirements in Subsections C or D of 20.2.50.116 NMAC.

D. Repair requirements: The owner or operator shall comply with the requirements of Subsection E of 20.2.50.116 NMAC.

E. Recordkeeping requirements: The owner or operator shall maintain the following electronic records for each facility:

(1) annual certification that the small business facility meets the definition in this Part;

(2) calculated VOC and NO_x emissions from each facility and the company-wide VOC and NO_x emissions for all subject facilities;

(3) records as required under Subsection F of 20.2.50.116 NMAC.

F. Reporting requirements: The owner or operator shall submit to the department an initial small business certification within sixty days of the effective date of this Part, and by March 1 each calendar year thereafter. The certification shall be made on a form provided by the department. The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

G. Failure to comply with 20.2.50.125 NMAC: Notwithstanding the provisions of Section 20.2.50.125 NMAC, a source that meets the definition of a small business facility can be required to comply with the other Sections of 20.2.50 NMAC if the Secretary finds based on credible evidence that the source (1) presents an imminent and substantial endangerment to the public health or welfare or to the environment; (2) is not being operated or maintained in a manner that minimizes emissions of air contaminants; or (3) has violated any other requirement of 20.2.50.125 NMAC.

[20.2.50.125 NMAC - N, XX/XX/2021]

20.2.50.126 PRODUCED WATER MANAGEMENT UNITS

A. Applicability: Produced water management units as defined in this Part are subject to 20.2.50.126 NMAC and shall comply with these requirements no later than 180 days after the effective date of this Part.

B. Emission standards:

(1) The owner or operator shall use best management and good engineering practices to minimize emissions of VOC from produced water management units.

(2) The owner or operator shall control VOC emissions from each produced water management unit to less than two tons per year.

C. Monitoring requirements: The owner or operator shall:

(1) calculate the monthly rolling 12-month total of VOC emissions in tons from each unit;

(2) monthly, monitor the best management and engineering practices implemented to reduce emissions at each unit to ensure their effectiveness; and

(3) comply with the monitoring requirements in 20.2.50.112 NMAC.

D. Recordkeeping requirements:

(1) The owner or operator shall maintain the following electronic records for each produced water management unit:

(a) name or identification of the unit and UTM coordinates of the unit and county;

(b) a description of the best management and engineering practices used to minimize release of VOC at the unit; and

(c) a record of the monthly rolling 12-month total VOC emissions from each unit.

(2) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. Reporting requirements: The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

[20.2.50.126 NMAC - N, XX/XX/2021]

20.2.50.127 PROHIBITED ACTIVITY AND CREDIBLE INFORMATION PRESUMPTION

A. Failure to comply with the emissions standards, monitoring, recordkeeping, reporting or other requirements of this Part within the timeframes specified shall constitute a violation of this Part subject to

enforcement action under Section 74-2-12 NMSA 1978.

B. If credible information obtained by the department indicates that a source is not in compliance with the provisions of this Part, the source shall be presumed to be in violation of this Part unless and until the owner or operator provides credible evidence or information demonstrating otherwise.

C. If credible information provided to the department by a member of the public indicates that a source is not in compliance with the provisions of this Part, the source shall be presumed to be in violation of this Part unless and until the owner or operator provides credible evidence or information demonstrating otherwise.

[20.2.50.127 NMAC - N, XX/XX/2021]

HISTORY OF 20.2.50 NMAC: [**RESERVED**]

National Park Service Technical Comments

20.2.50 NMAC OIL AND GAS SECTOR-OZONE PRECURSOR POLLUTANTS RULEMAKING (EIB NO. 21-27 (R))

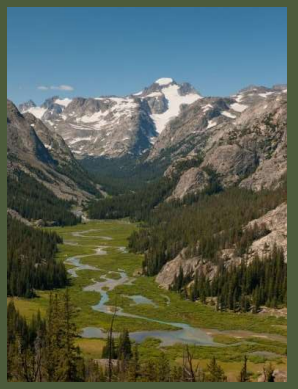
Synopsis

- Ozone concentrations exceed the level of the National Ambient Air Quality Standards (NAAQS) for ozone at Carlsbad Caverns National Park (NP) in New Mexico
- Volatile Organic Compounds (VOCs) measured at Carlsbad Caverns NP indicate the main sources of VOCs affecting ozone formation are from oil and gas activities
- Nitrogen oxide (NO_X) emissions that affect high ozone concentrations at Carlsbad Caverns NP are from local sources
- The measures proposed in this rule will help to reduce high ozone concentrations – more measures or more stringent measures are likely necessary to get below the NAAQS – this is a necessary step
- NO_x and VOC control measures are necessary to reduce ozone

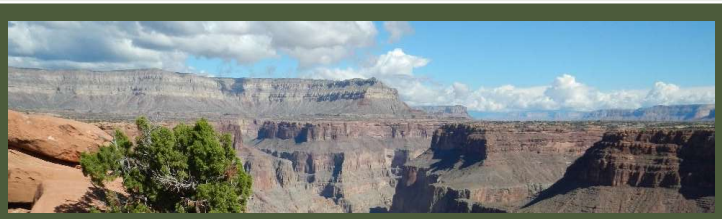
The NPS and Air Resources—Why we Care

"…which purpose is to conserve the **scenery and the natural and historic objects** and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will **leave them unimpaired** for the enjoyment of future generations." (NPS Organic Act)

"Wilderness areas…shall be administered…in such a manner as will **leave them unimpaired** for future use and enjoyment as wilderness…" (Wilderness Act of 1964)



"…**preserve, protect and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores**…" (Clean Air Act as amended in 1977)

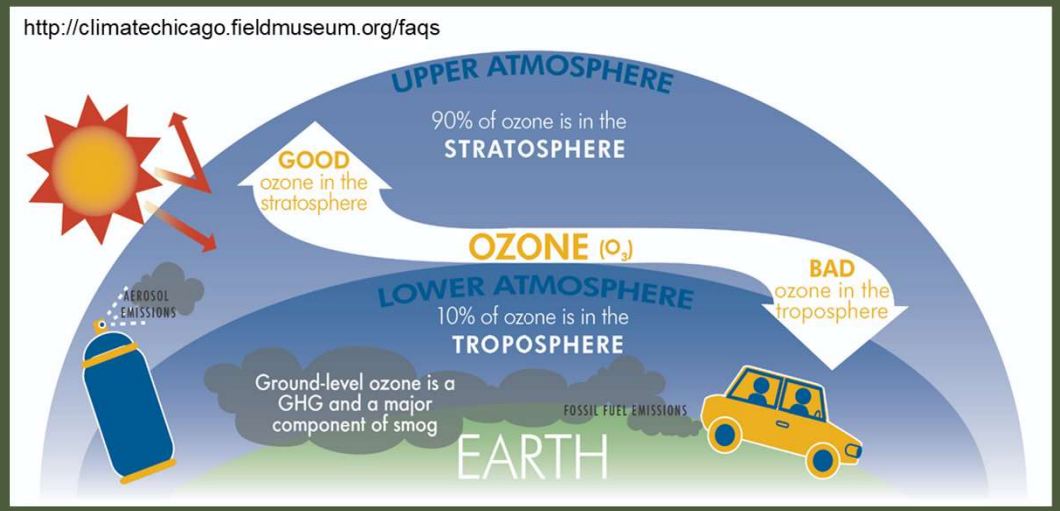


Regional Haze Rule, 1999

Requires state and federal agencies to work together to improve visibility in all 156 federal Class I national parks and wilderness areas

"In cases of doubt the land manager should err on the side of protecting the air quality-related values for future generations." (Senate Report No. 95-127, 95th Congress, 1977)

Ground Level Ozone

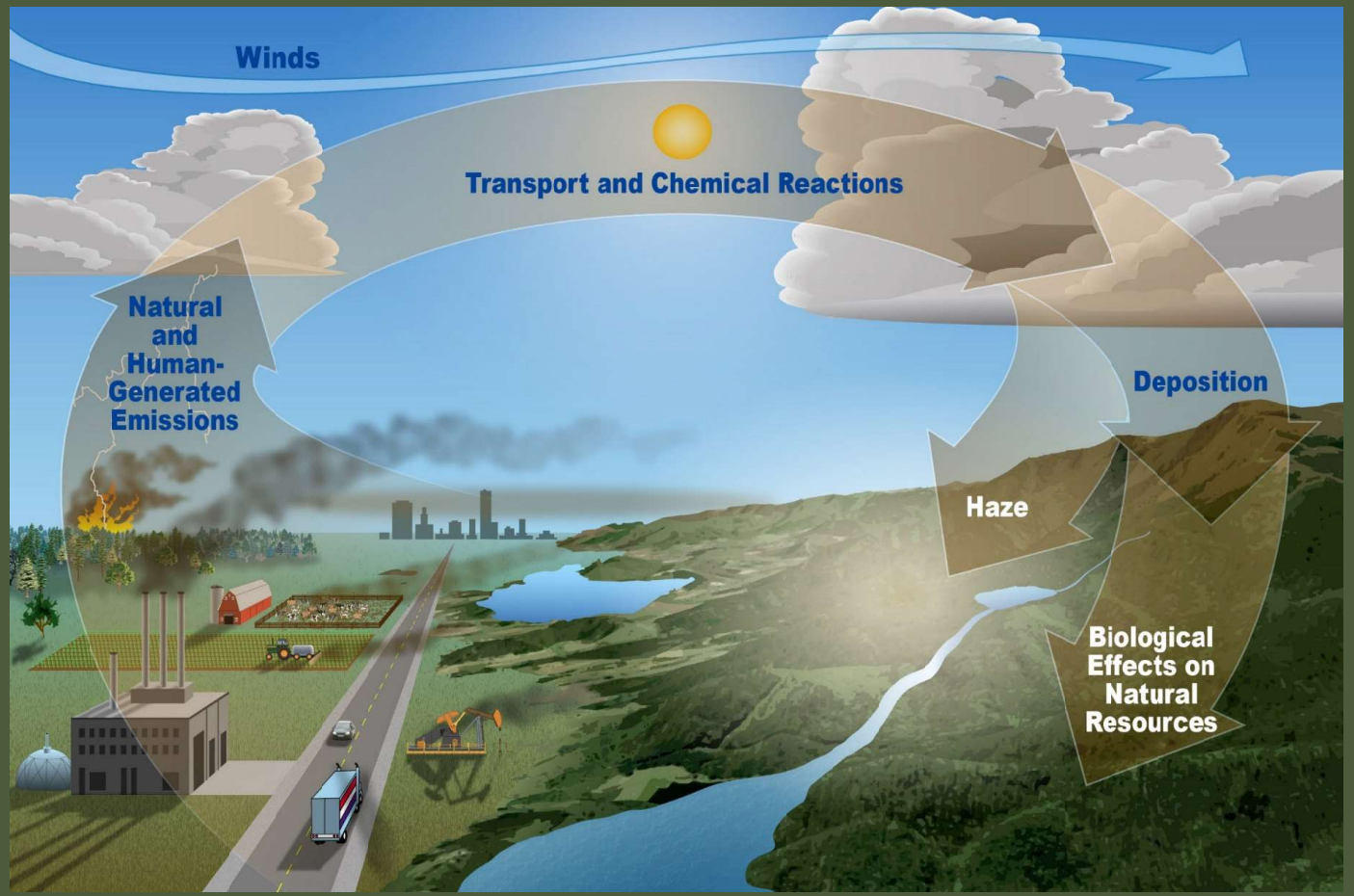


- Formed by reactions of NO_x and VOCs in the presence of sunlight
- Impacts vegetation and human health
- EPA Regulated Pollutant

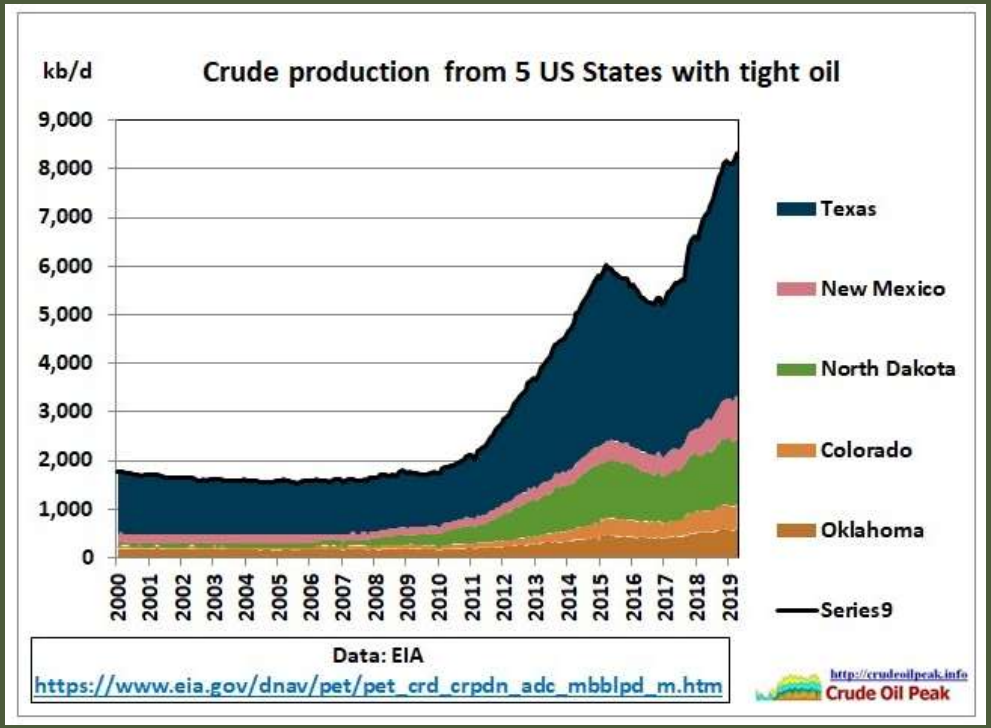
Lung Function

Foliar Injury

Pollutants Come from Outside Parks

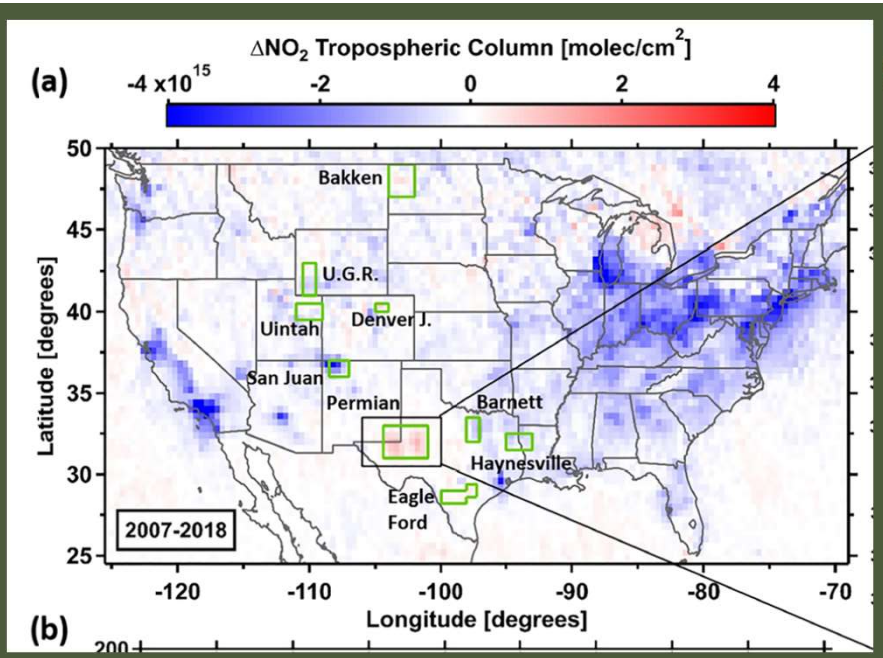


Extensive Oil & Gas Activities throughout Midwest and West



Increases in NO_x* and Ozone at Carlsbad Caverns National Park

*NOx = NO + NO_2



Trends in NO_x, from satellite data
(Dix et al., 2020)

Carlsbad Caverns Ozone

70 ppb is the national standard

Year	# Exceedance Days	Years	8-hr 4th high O_3
2016	None	2014-2016	67
2017	None	2015-2017	66
2018	10	2016-2018	**71**
2019	6	2017-2019	**74**
2020	9	2018-2020	**73**

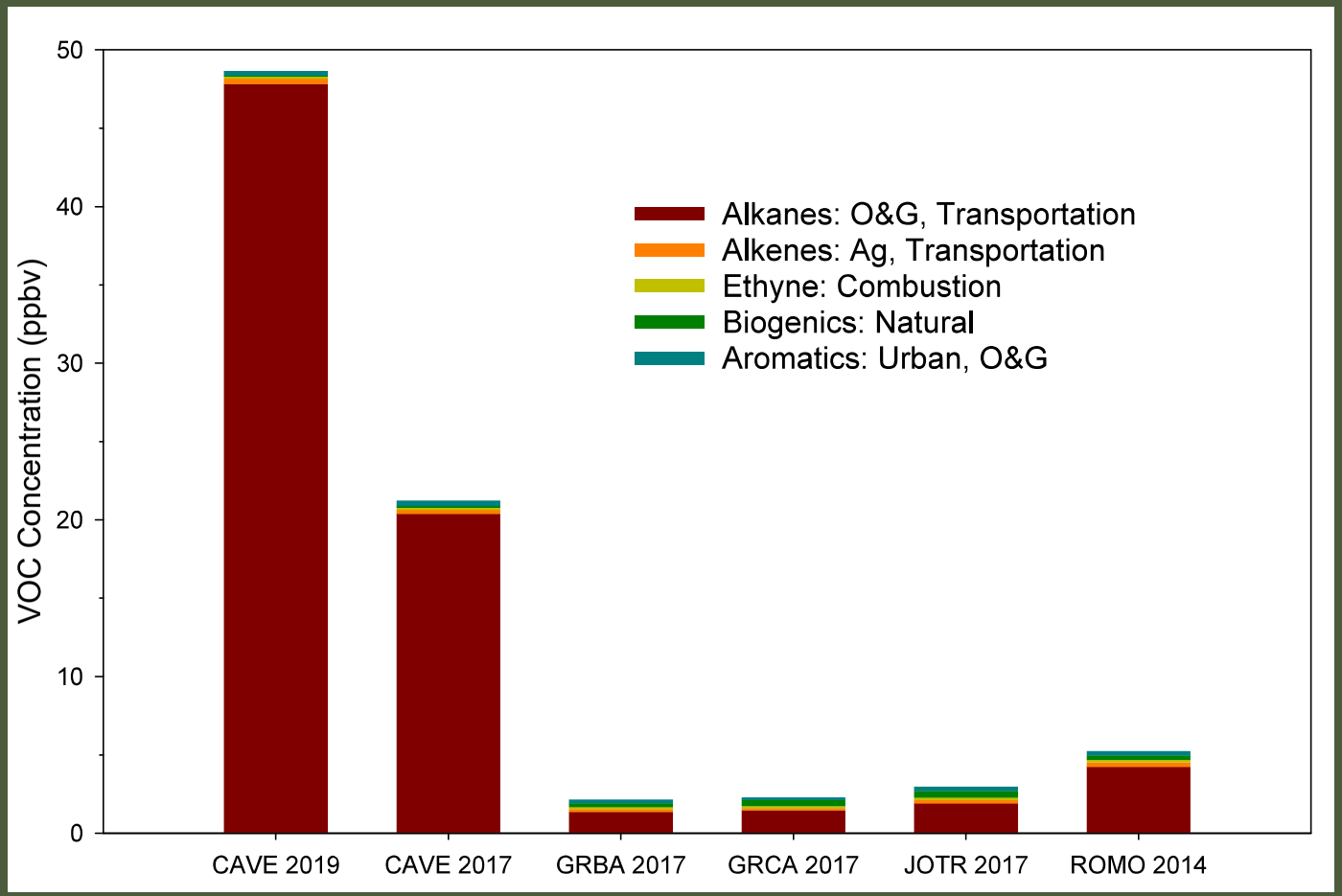
Measuring VOC markers (**70+**) to better understand sources affecting parks

- **Oil & Gas**
  - NMHCs: light alkanes C2-C6, i-butane/n-butane, i-pentane/n-pentane
- **Biomass Burning**
  - acetonitrile, methyl halides (CH_3Cl, CH_3Br, CH_3I), OVOCs (MeOH, acetone)
- **Urban**
  - industrial: benzene, toluene, xylenes
  - solvent evaporation: halocarbons (CH_2Cl_2, C_2Cl_4, C_2HCl_3, $CHCl_3$, CH_3CCl_3)
  - Waste water treatment: $CHCl_3$, $CHBr_3$
- **Agriculture**
  - crops: alkenes (hexenes, ethene, propene), DMS, $CHBr_2Cl$
  - animal husbandry: methanol, ethanol, acetaldehyde
- **Transportation**
  - Fuel Evaporation: i-pentane/n-pentane
  - fuel combustion: ethyne, ethene, propene, benzene,
  - exhaust: i-butane/n-butane, i-pentane/n-pentane, alkenes, ethyne
- **Biogenic/natural emissions:**
  - isoprene, monoterpenes
- **Stratospheric Intrusion:**
  - OCS, CFCs, HCFCs
- **Ocean/Marine:**
  - $MeONO_2$, $CH2Br_2$, $CHBr_3$, CH_2ClI, DMS, OCS
- **Oxidation/photochemical processing:**
  - $RONO_2$, OVOCs

VOC Survey Study
April – September 2017

- Mix of VOCs collected tell us about the sources impacting the parks.
- Park Natural Resource Staff at four parks collected VOC canisters over 5-month period.
  - Carlsbad Caverns NP (CAVE)
  - Great Basin NP (GRBA)
  - Grand Canyon NP (GRCA)
  - Joshua Tree NP (JOTR)

Average VOC Concentration



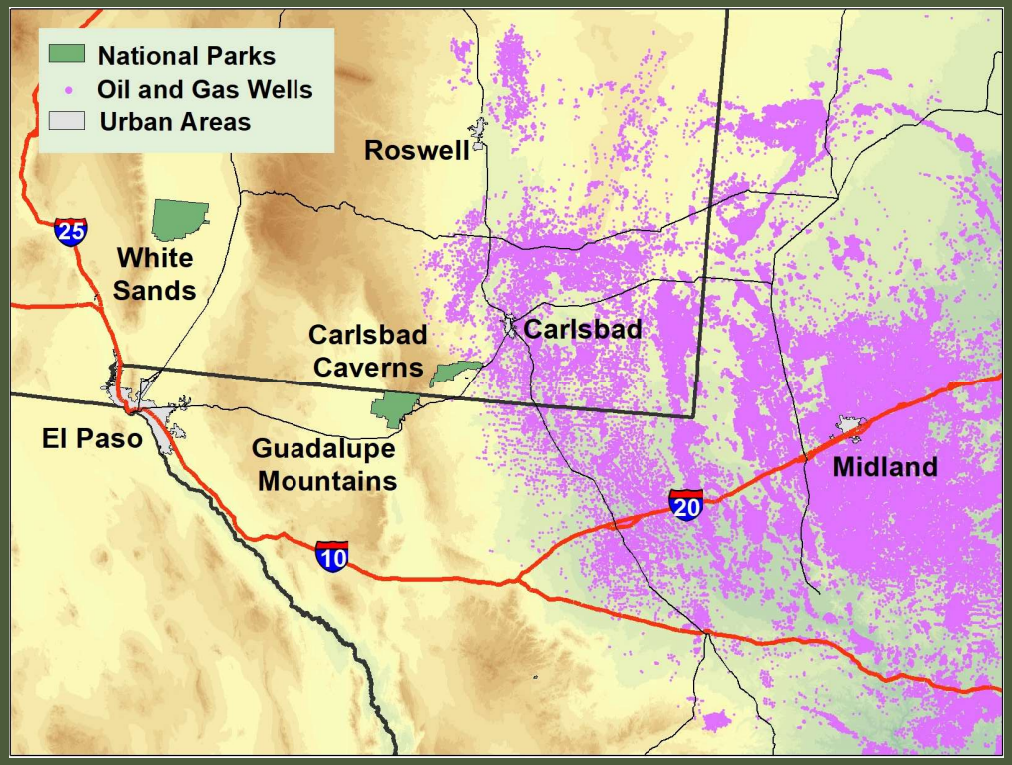
Carlsbad Caverns NP

VOC Mix Dominated by Oil &Gas

Carlsbad Caverns NP Sampling Notes

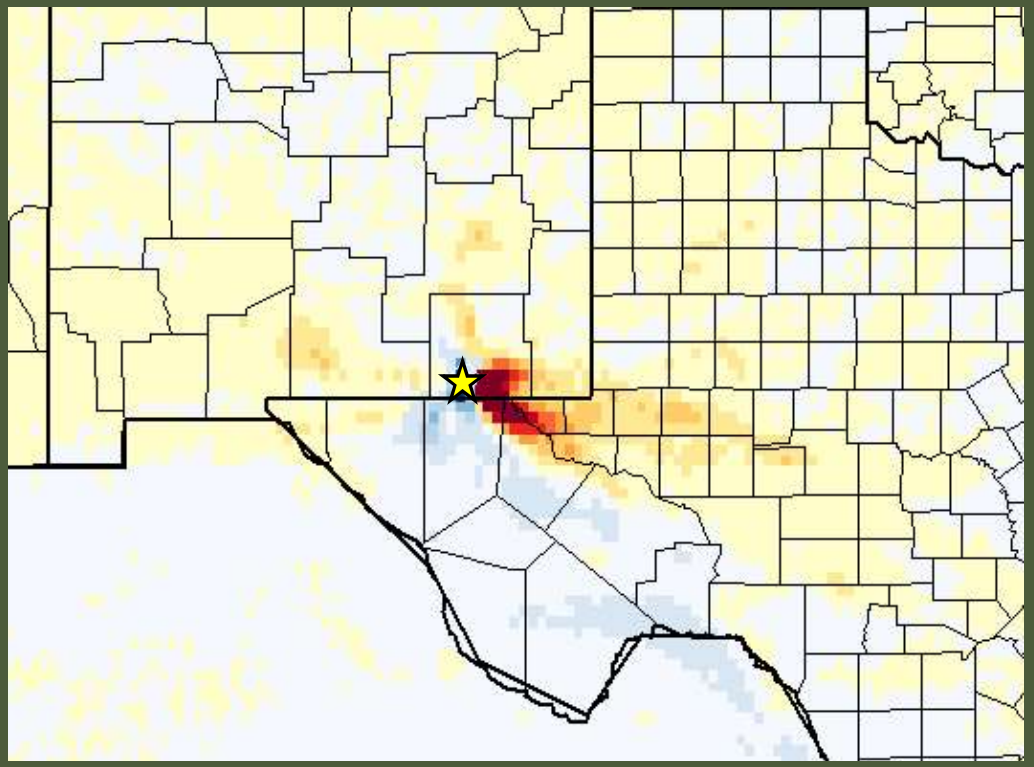
- 2017: Daytime only
- 2019: Hourly diurnal

Extensive Oil and Gas Development near Carlsbad Caverns NP



Where does air come from during periods of high ozone?

Where the Air Comes From When Ozone is High



Warm colors: ***More likely*** to come from these areas during high concentrations.

Cool colors: ***Less likely*** to come from these areas during high concentrations.

Carlsbad Caverns National Park 2019

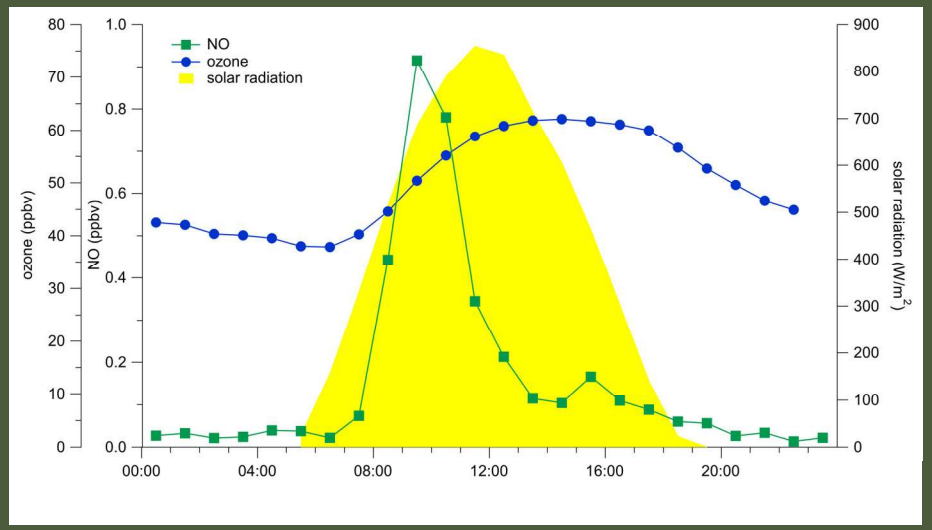
- Intensive 6-week study characterizing aerosol and gases at Carlsbad Caverns NP, with additional measurements in surrounding areas, including Guadalupe Mountains NP.
- Most extensive dataset to date

Carlsbad Caverns National Park Study 2019 - Objectives

1. What are the primary VOC drivers of regional ozone formation and how might future changes in VOC emissions affect peak ozone at Carlsbad Caverns National Park?
2. What is the nitrogen budget in the region and how sensitive is ozone formation to changes in NO_x concentrations?
3. What species, e.g. NO_x, H_2S, and VOC, contribute to or limit aerosol formation (which affects health standards and visibility)?

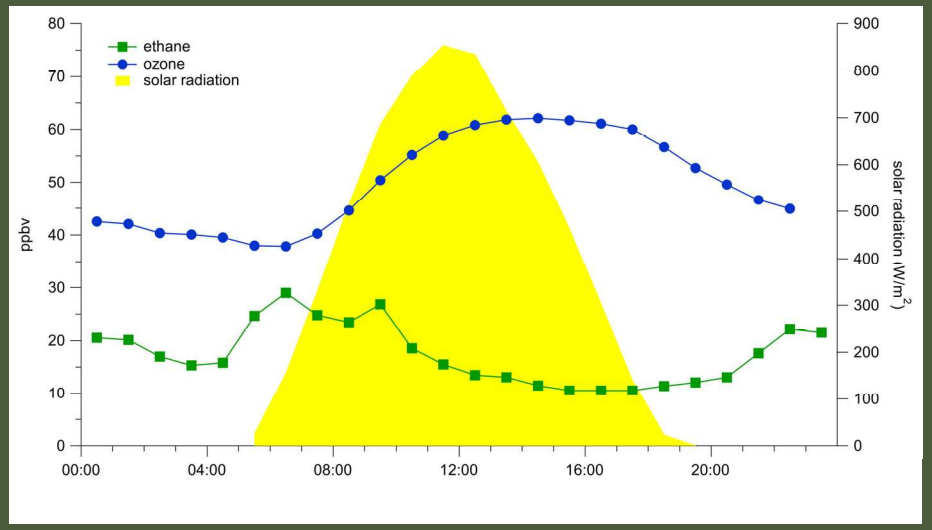
How do VOCs and NO_X interact?

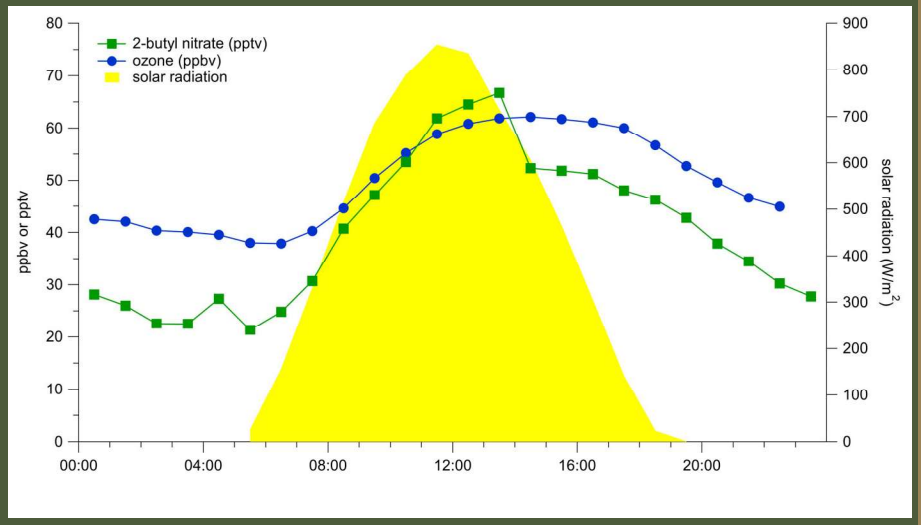
- The next slide shows the average concentrations of ozone, NO, and VOCs during the 2019 study
- Each figure shows the average ozone and the sunlight intensity for each hour of the day
- The three charts show the diurnal (daily) patterns of different compound classes:
  - How NO (unreacted NO_X) and ethane, one of the most abundantly emitted VOCs, build up and are reacted away
  - The formation of alkyl nitrates, one of the classes of VOCs formed through VOC + NO_x reactions in the atmosphere, has a similar pattern to ozone



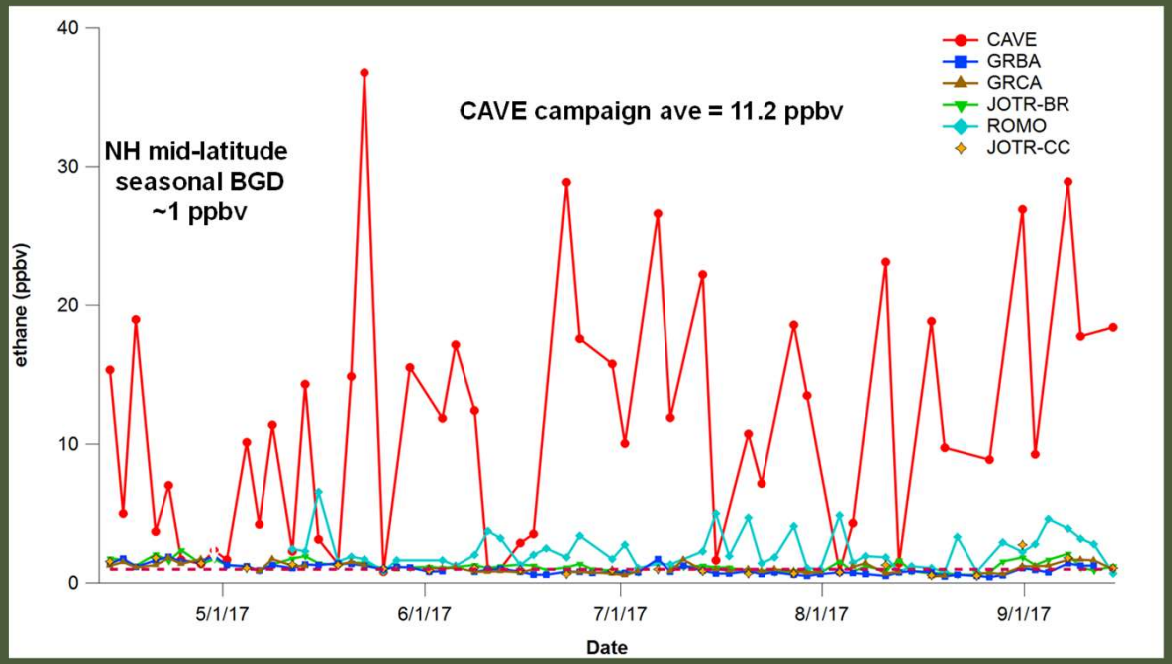
Diurnal Averages from 2019

- Ozone peaks in the late afternoon
- NO has a morning spike and emissions throughout the day
- VOCs (e.g., ethane) build up overnight and are reacted away during the day + mixing & dilution
- Secondary chemistry products, such as the alkyl nitrates (e.g., 2-butyl nitrate), have a similar diurnal distribution as ozone
- Alkyl nitrates are formed from parent n-alkane in the presence of NOx – high levels indicate abundant sources and local photochemistry





2017 and 2019 studies showed similar results at Carlsbad Caverns



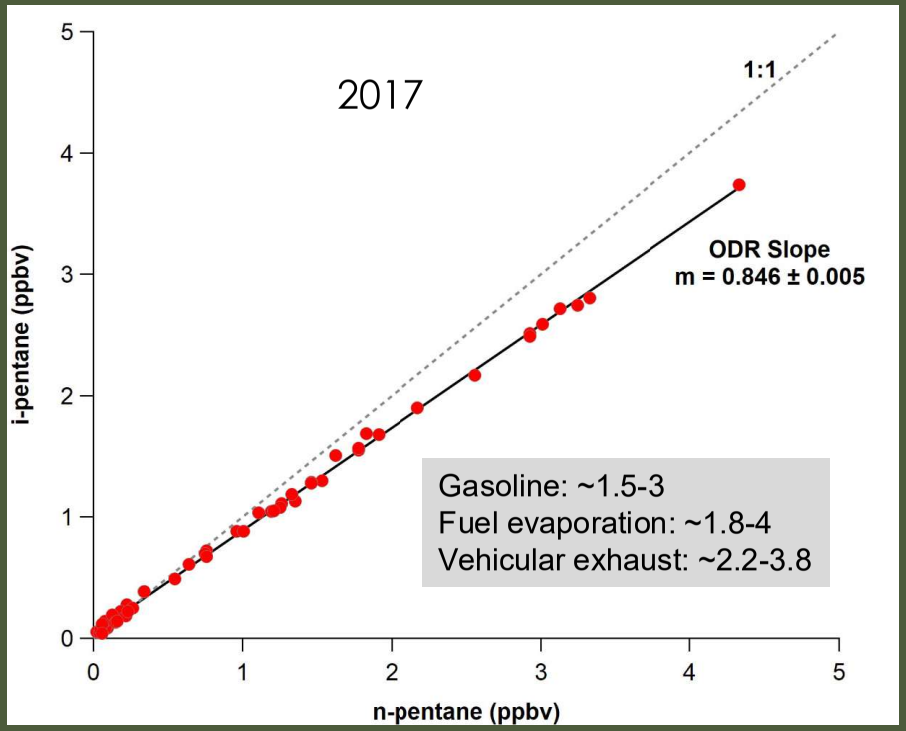
Ethane avg 2019 = 17.3 ppbv
Hourly sampling exhibited higher diurnal variability
Regularly observed levels >100 ppbv

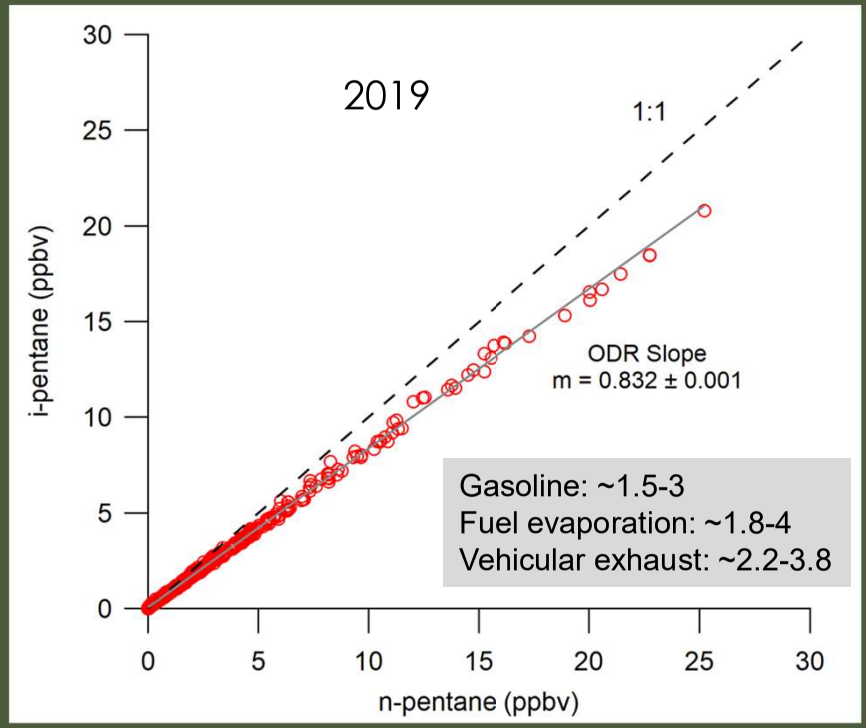
High VOC concentrations are all from oil and gas emissions.

Oil & Gas Emissions Tracers

The Pentane Ratio

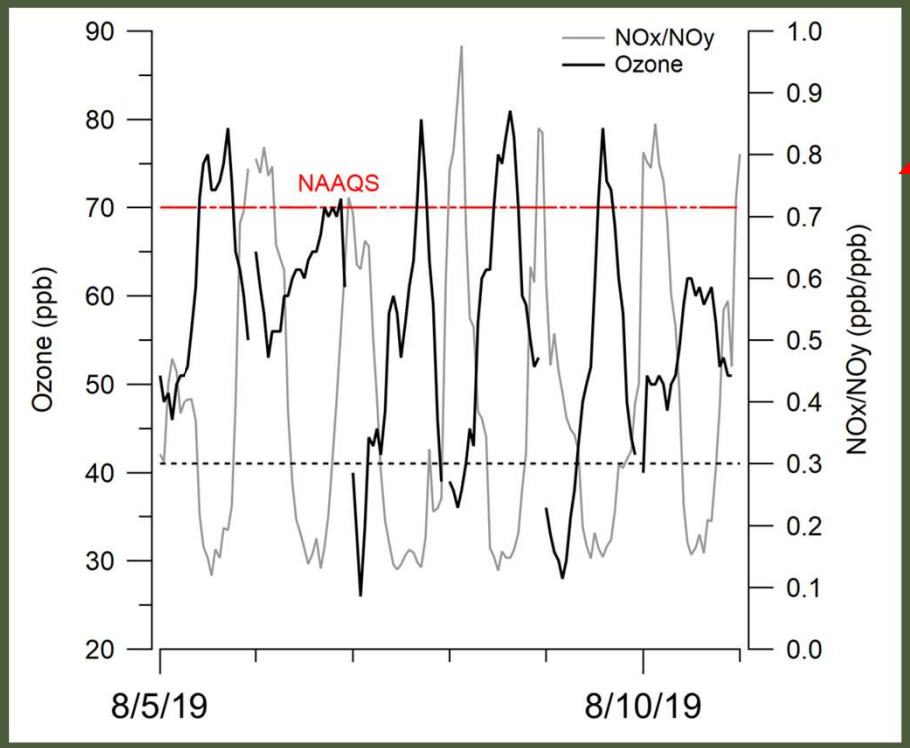
Carlsbad Caverns National Park 2017 & 2019





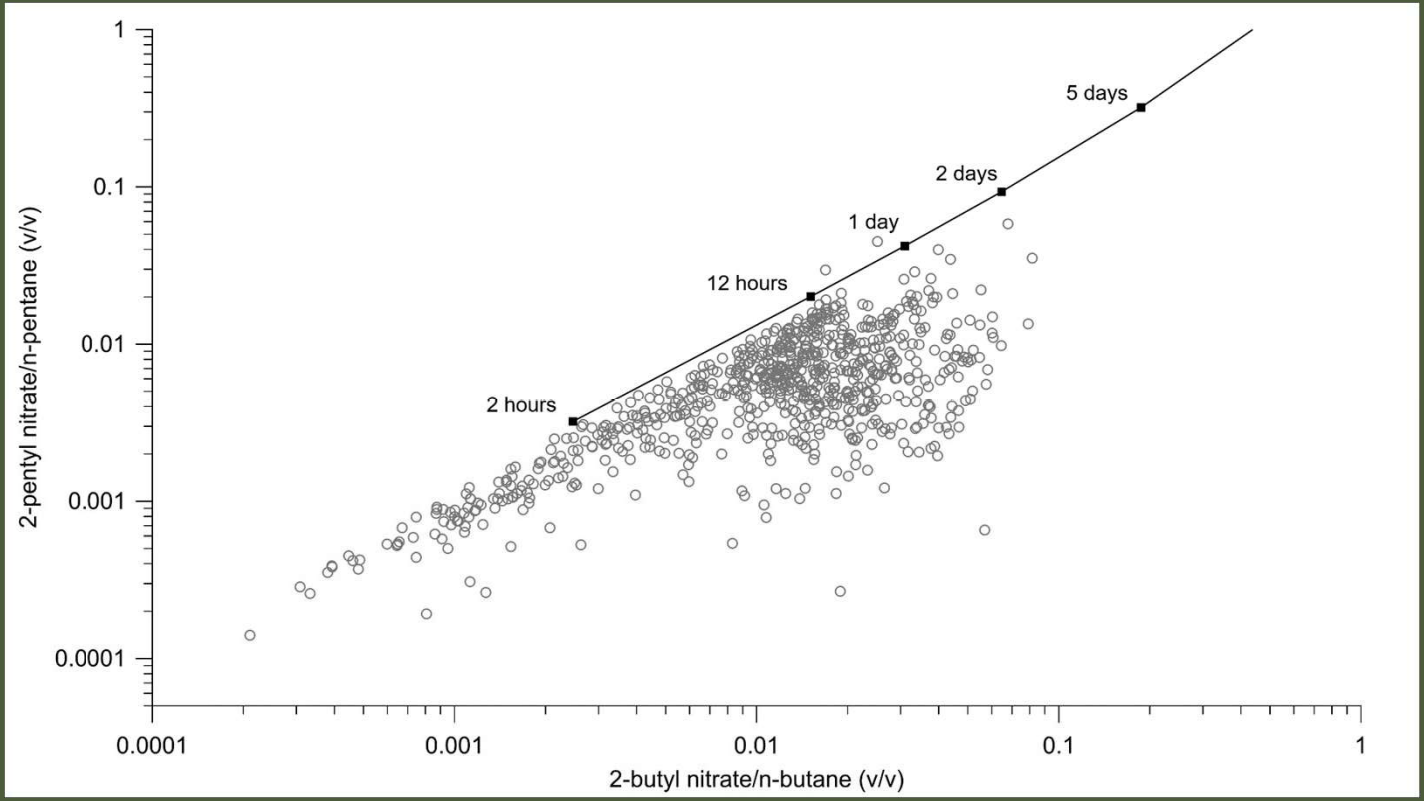
Fresh NO_x builds up at night and then reacts to form ozone

NOx/NOy > 0.3 → fresh pollution
NOx/NOy < 0.3 → photochemically aged (processed) air



Photochemical Age using Alkyl Nitrates

Air mass aging (photochemical age) from ratios of alkyl nitrates to parent n-alkanes illustrate that VOC and NO_x emissions are fresh and air masses are impacted by local sources.



The data support the need for this rule

- Ozone concentrations at Carlsbad Caverns National Park frequently exceed the national ambient air quality standard for ozone.
- The information presented highlights the need for both NO_x and VOC reductions and supports the proposed engine & turbine standards.
- NMED's proposed NO_x limits for engines and turbines are similar to on-the-books standards in other states including Texas and Pennsylvania.
  - Note: California engine NO_x limits are significantly more stringent than NMED's proposal—our recommended changes are based on Pennsylvania's Best Available Technology limits.

Recommended changes (1)

- Based on examples from Pennsylvania's state requirements, we recommend the following changes be incorporated to strengthen the proposed rule.

→ **Rich-burn Engines**

- Require all *new* and *existing* rich-burn engines >500 HP to meet a limit of 0.2 g NO_x/hp-hr
  - NMED proposal is 0.5 g NO_x/hp-hr
- Require all *new* and *existing* rich-burn engines >100 HP and ≤500 HP to meet a limit of 0.25 g NO_x/hp-hr
  - NMED is not proposing limits for this class size
- Require all *new* rich-burn engines ≤100 HP to meet a proposed limit of 1.0 g NO_x/hp-hr
  - NMED is not proposing limits for this class size

Recommended Changes (2)

→ **Lean-burn Engines**

- Require all *existing* lean-burn engines ≤100 HP to meet a proposed limit of 2.0 g NO_x/hp-hr
  - NMED is not proposing limits for this size class
- Require all *existing* lean-burn engines >100 and ≤500 HP to meet a proposed limit of 1.0 g NO_x/hp-hr
  - NMED is not proposing limits for this size class
- Require all *existing* lean-burn engines >500 HP to meet the proposed limit of 0.5 g NO_x/hp-hr
  - NMED is proposing this limit for all existing engines greater than 1,000 HP
- Require all *new* lean-burn engines ≤ 500 HP to meet a proposed limit of 1.0 g NO_x/hp-hr
  - NMED is not proposing limits for this size class

Recommended Changes (3)

→ **Existing Turbines**

- Require all *existing* turbines ≥1,000 and <5,000 HP to meet a NO_x limit of 25 ppmvd @15% O_2
  - NMED is proposing a limit of 50 ppmvd @15% O_2 for all turbine size classes
- Require all *existing* turbines ≥ 5,000 HP and < 60,000 HP to meet a NO_x limit of 15 ppmvd @15% O_2
  - NMED is proposing a limit of 50 ppmvd @15% O_2 for all turbine size classes
- Require all *existing* turbines ≥ 60,000 HP to meet a NO_x limit of 9 ppmvd @15% O_2
  - NMED is proposing a limit of 50 ppmvd @15% O_2 for all turbine size classes

National Park Service Summary

- Ozone concentrations exceed the level of the National Ambient Air Quality Standards (NAAQS) for ozone at Carlsbad Caverns National Park
- The NPS has studied ozone formation at a number of parks. Carlsbad Caverns National Park stands out as being most affected by oil and gas sources.
- Two studies have been done at Carlsbad in 2017 and 2019, during times when peak ozone concentrations are measured there. The two studies show consistent results.

Summary (continued)

- Volatile Organic Compounds (VOCs) measured at Carlsbad Caverns NP indicate the main sources of VOCs affecting ozone formation are from oil and gas activities
- Nitrogen oxide (NO_x) emissions that affect high ozone concentrations at Carlsbad Caverns NP are from nearby sources
- The measures proposed in this rule will help to reduce high ozone concentrations –this is a necessary step
  - More measures and/or more stringent measures are likely necessary to get below the NAAQS
- NO_x and VOC control measures are necessary to reduce ozone

Questions?